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THE BOTANICAL SOCIETY AND EXCHANGE CLUB OF THE BRITISH ISLES.

REPORT FOR 1923

(WITH BALANCE SHEET FOR 1922)

BY THE

SECRETARY,

G. CLARIDGE DRUCE, LL.D.

VOL. VII. PART I.

PUBLISHED BY
T. BUNCLE & CO., MARKET PLACE, ARBROATH.

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RUMEX ARIFOLIUS All.

A NEW BRITISH SPECIES.

2209 (2). Rumex arifolius All. Fl. Pedem. ii., 204, 1785, not of the younger Linnaeus, nor of Aiton. The *arifolius* of Linn. fil. is *R. abyssinicus* Jacq. Hort. v., 48, 1776.

Syn. :—[*Acetosa montana maxima*, Bauhin Pinax 114. *Acetosa montana, lato arifolio*, Boccone Mus. 165, t. 125. *Lapathum sexubis separatis, foliis sagittatis, hamis brevissimis recta divergentibus*, Haller Hist. ii., 204, n. 2040, 1768.] *Rumex Acetosa* L. Sp. Pl. 337, 1753, var. δ with references to Bauhin and to Scheuchzer Alp. 129 and var. ϵ with syn. from Boccone. *Acetosa alpina* Miller Gard. Dict., n. 5, 1768. *Rumex montanus* Desf. Tabl., ed 2, 48, 1815. *R. hispanicus* Gmelin Fl. Bad. ii., 112, 1806, not of Koch. *R. Allionii* Link Handb. i., 306, 1829. *R. sylvaticus* Roth Handb. Tent. Fl. Germ. i., 129, 1788, not of Rafinesque. *R. alpestris* Scop., not of Jacquin. *R. dimorphus* Gren. in Gren. & Godr. Fl. Fr. iii., 43, 1856. *R. Acetosa*, var *alpestris* Hartm. Handb. Sk. Fl.

Exsicc. :—Reichb. n. 4235.

Icon. :—Boccone Mus., t. 125. Reichenbach Ic. Fl. Germ. et Helv. xxiv., t. 195.

Distr. :—Lapland; Sweden; Norway (Dovrefeld, 3000 ft.); Germany (Brocken); Thuringia; Schwarz; E. Bohemia; Alpes (rare); Jura; Auvergne (Mt. Doré); Vosges; Sudetica; Austria; Hungary; Transylvania; Bosnia; Montenegro; Italy; Corsica; Sardinia; Greece; Siberia; Caucasus.

Descr. :—Stem simple, erect, 5-10 dcm. ; stem leaves thin and soft in texture, with 5-7 prominent nerves, shortly petiolate, oval-oblong, acuminate, more or less hastate-cordate with broad sinus the auricles short, the root-leaves few, 1-2, stalked, short, somewhat rounded at top, the upper leaves narrow, amplexicaul; ochrea membranous, sometimes disappearing before the flowering period, short, terminated by a truncate projection; inflorescence paniculate, with simple alternate branches, bearing 3-6 flowered ebracteate verticels, the flowers on capillary pedicels; fruit-valves medium sized, suborbicular, truncate or cordate at the base, entire, longer than the nut, and having at the base a small reflexed scale; external divisions of perianth reflexed; nut dull, yellowish-green.

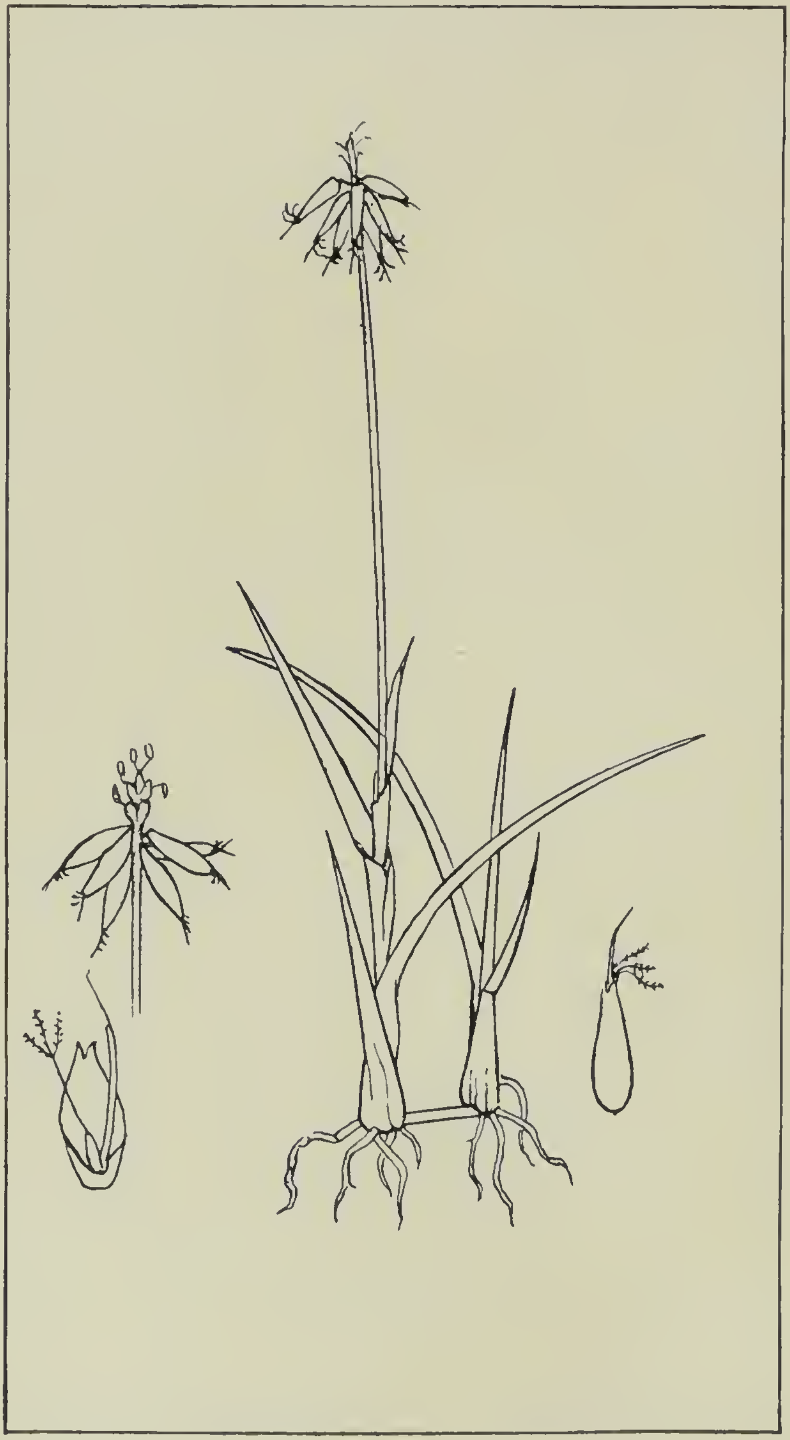
This species is allied to *R. Acetosa* with which, as we have seen, Linnaeus merged it as a variety, but it is kept distinct by all modern botanists. Its main differences are in its larger and often broader leaves of a softer and thinner texture, with more prominent veins, and patent auricles, entire ochrea, somewhat smaller fruit-valves and dull yellowish-green nuts.

In *Acetosa* the leaves are of a firm texture, with obscure veins, long converging auricles and narrow sinus, laciniate ochrea, larger fruit-valves and blackish-brown shining nuts.

British Habitat :—on shady damp mountain-cliffs, not easy of access, at about 2900 feet high on Lochnagar, South Aberdeenshire. —G. C. Druce.

It is indubitably native and shows another and important link with the Scandinavian flora. I am indebted to Professor Danser of Amsterdam the well known authority on Rumices, for its identification.

G. CLARIDGE DRUCE.



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(VOL. VII. PART I.).

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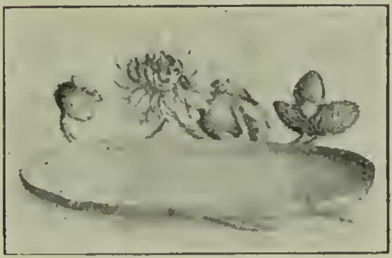

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REPORT FOR 1923.

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Printed by T. Buncle & Co., Arbroath.
November 1924.

PRICE 10/-.

The Editor does not hold himself responsible for Statements in Signed Contributions.)

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Ulleswater, The Viscount.

†Vachell, Miss.
Veitch, Sir Harry.
Victoria, The Public Library of.
†Vines, Dr S. H., F.R.S.
Vevers, G. H.
Vigurs, C. C., M.D.
Vincent, C. F., M.A.
Vivian, Miss.
†Voigt, Alban.

†Wade, A. E.
Wales, National Museum of.
†Walker, H.
†Wall, T. J.
Washington, Dept. of Agriculture.
Watchorn, Mrs Elsie, M.P.S.
*Waterfall, Chas., F.L.S.
Watney, The Lady Margaret, 1924.
Watson, W.
†Webb, J. Arthur, B.A.
†Webster, Alfred.
†Webster, Canon G. R. Bullock.
Webster, George.
†Wedgwood, Mrs.
Weiss, Prof. F. C., F.R.S.
†Weyer, Major Bates Van de.
†Weyer, William Van de.
*Wheldon, J. A., M.Sc.
*White, J. Walter, F.L.S.
Whymper, Lieut. R., F.L.S.
Whyte, J. S.
Wilkinson, J. G.
*Wilkinson, Miss Agatha.
Wilkinson, E. B.
Williams, Miss Ethel M.
†Williams, Miss Lavender.
Williams & Norgate.
†Williamson, R. H.
Willmott, Miss E., F.L.S.
Wills, G. S. V., F.R.B.S.
*Wilson, A., F.L.S.
Winchester College Natural History Society.
†Wise, W.
*Wolley-Dod, Lieut.-Col. A. H.
Wood, Hon. Mrs Evelyn.
Woodhead, Prof. T. W., Ph.D.
Worsdell, W. C.
Wotton, Miss M. G.
Wren, R. C., F.L.S.

†Yapp, Prof. R. Y.
†Young, Dr J.
Young, F. S., M.A.
†Young, Miss Gertrude.

THE

BOTANICAL SOCIETY & EXCHANGE CLUB OF THE BRITISH ISLES.

THE REPORT OF THE SECRETARY & TREASURER,

G. CLARIDGE DRUCE, YARDLEY LODGE, OXFORD,

FOR 1923.

BALANCE-SHEET FOR 1922.

Subscriptions received, -	£216	8	6	Printing Reports, - -	£135	7	4
Sales of Reports and Advertisements, - -	21	0	6	Distributor's Expenses, -	2	16	0
Donations (Patton & Britton),	2	0	0	Purchase of Reports, -	3	0	0
Balance from 1921, - -	23	10	9	Postages, Carriages, Binding, Stationery, Experts, &c.,	27	16	5
				Towards List, - -	70	0	0
				Balance carried forward, -	24	0	0
	£262	19	9		£262	19	9

Life Members' Fund, - - - - - - -	£64	15	6
Balance of Benevolent Fund, . - - - -	26	10	0
Balance in hand, - - - - - - -	24	0	0
	£115	5	6

Towards List, - - - - - - - - -	£70	0	0
Donation towards List, R. H. Williamson, Esq., -	25	0	0
Orders for List, - - - - - - - -	8	16	6
	£103	16	6

Audited and found correct, January 23, 1924.—F. Twining.

The subscriptions—Ordinary Members, 10/-; Exchange Members, 12/6—are due, and should be paid on the first of Janaury each year to G. C. Druce at the above address. Payment in advance for two or more years saves trouble and expense. Entrance fee for New Members, 5/-.

The Exchange Members are very grateful to L. V. Lester-Garland, Esq., for so ably editing the *Report* for 1922, and distributing the 4903 specimens so expeditiously.

The year 1923 was, with the exception of a short spell of abnormally hot weather in July, damp, dreary and dull, and did not encourage outdoor investigation. Flowers were in poor show, with the exception of white-flowered species such as *Galium palustre*, *Radicula Nasturtium*, *Cerastium pumilum*, *Sambucus nigra*, and *Meum Athamanticum*. These blossomed profusely. The hawthorn, which had over-flowered itself in 1922, was conspicuously deficient in blossom, and necessarily in fruit, so that the hedgerows in autumn were singularly lacking in colour. In the Midlands the Marsh Orchids were scarce, but the Fragrant Orchid on the Ivinghoe chalk downs was in unusually magnificent growth. So, too, was the spring-flowered *Gentiana Amarella*. In Scotland, especially in the mountains of Aberdeen, Forfar, and Perth, the heavy snowfall in May led to a great retardation of the flowering season, indeed of the growth of vegetation in general. Never have I seen so little grass on the higher hills in July. In Caenlochan, for instance, in a place where I have seen thousands of *Phleum alpinum*, not a single spike this year showed itself, and the same might be said of *Juncus castaneus* and *Carex atrata*. But the acres of the foamy white flowers of *Meum Athamanticum* and the sheets of the golden glory of *Viola lutea* in the lower straths did something to atone for the flowerless cliffs of the higher hills.

The great botanical event of the year was the discovery of a very small sedge, but a big species, *Carex microglochin*, by Lady Davy and Miss Gertrude Bacon in Glen Lyon, Perthshire—a sedge I had long expected and sought for and had fully hoped to meet with in the Shetlands. This alone would redeem the year, as it is a very distinct species, about the identity and indigenity of which there can be no question. Mr A. J. Wilmott records *Myosotis sicula* from Jersey, an interesting extension of the range of a critical plant. Its nearest British ally is *M. cespitosa*, from which it is unquestionably distinct. Scotland is, however, to the fore for Professor Danser has identified a *Rumex* which I gathered some years ago on Lochnagar as *R. arifolius*, a plant which occurs in Sweden and in other places in Europe. It is kept as a distinct species by Nyman, Lindman, Koch, Reichenbach, Rouy, and other authorities. Its nearest ally is *R. Acetosa*, of which I thought it was a variety, but its entire ochrea, among other characters, differentiates it. The plant grew on a shady cliff at nearly 3000 feet altitude. I hope to visit the station this year in order to obtain a supply of specimens for the Club. Mr Lumb and myself have named two Scottish Eyebrights—one from Glen, Peebles-shire, which Mr Bucknall thought was *E. gracilis*, var. *primaria*, but other botanists have given it various names. It seems sufficiently distinct from any of the plants suggested to be worthy of specific rank. In allusion to its variously coloured flowers we are naming it *variabilis*. The other *Euphrasia* is from the Mainland of Orkney. It does not agree with any of our named plants. It was unknown to Jorgensen, who said it was a new species. We have called it *atroviolacea* in allusion to its very distinct flower colour. With Dr Thellung I have named and described a large flowered, glandular phyllaried form of *Crepis capillaris* as var. *anglica*. A very distinct glabrous variety of *Sisymbrium Thalianum*, which Mr A. Wilson detected at Cautley Crags in 1922 I have named var. *brevicaule*. Its habit recalls *Erophila verna*. The beautiful hybrid Rose (*mollis*, var. *alba* × *pimpinellifolia*) from Bettyhill, which was discovered by the Rev. E. S. Marshall, is now named *R. Barclayana* in memory of our Rose expert who has recently passed away. It was in beautiful flower in July this year. Mr R. L. Smith, of Cardiff, has added many aliens from Radyr, mostly of the south Italian or French coasts. These grow about 12 miles inland on sand which has been brought from the sea-shore. Their occurrence suggests that the seeds had remained in the sand for some time. On its removal from the coast to fill up some low waste ground the seeds were probably exposed to the air, and have now germinated. With what produce the sand was brought from the Mediterranean coast I have not been able to ascertain. Mr Ware found *Thlaspi alliaceum* in great quantity in arable fields near Wye, Kent. *Benthamia intermedia* (*Amsinckia*), a Californian alien, has been sent from Bedfordshire. It has become a pest in arable fields. Lady Davy sends the pretty *Ornithopus roseus* from near Pyrford, Surrey, where it grew in thousands. Mr Colin Trapnell found what Dr Murr and Kew have named *Senecio erraticus* Bert.

It grew at Lyndhurst. If correct, this will be an addition to the English Flora, as it has only been reported previously by M. Gay in 1832 from Guernsey. *Pyrus communis* is also added to Guernsey by Mr Trapnell. Miss Vachell found *Orchis militaris*, an addition to the Channel Isles, in Jersey, but I want to see the plant in situ, as the leaves of my specimen are in poor condition. Mr H. K. Airy Shaw discovered *Orchis hircina* in E. Norfolk, and Miss Stewart found a colony of it in N. Somerset, both New County Records. It has also re-appeared in Cambridge. Mr D. A. Jones obtained *Salix herbacea* on Cader Idris, a new record for Merioneth. Mr Noel Sandwith discovered just within our county boundary *Carex tomentosa*, a long desired plant for Oxfordshire. *Viola calcarea* has been found by Mr W. A. Sledge in N.-W. Yorkshire. Paul Richards discovered *Cerastium vulgatum*, var. *serpentini* in Bucks. Col. H. H. Johnston has added *Potamogeton rutilus* to the Orkney flora, and I have found *Agropyron campestre* Gren. and Godr. at Chichester Harbour, a new British plant. Prof. Danser has definitely identified as × *Rumex Weberi* our Sussex " *maximus*." Dr Almquist has added another Shepherd's Purse to our List—*C. pinnata*.

The year 1923 has not passed without diminishing our ranks. The deaths include those of Mr William Barclay, whose knowledge of the British Roses was very thorough. He had specially studied the Scottish hybrids. His notes bore the mark of thorough work, and his criticisms were sound and well considered, and of the highest value to our Exchange Club Reports. Personally he was a genial and kindly man. It was always a delight to go for a ramble with him, to come to his home to a real Scottish welcome, and have a chat with his good wife and enjoy her genuine hospitality. She only shortly predeceased him. The sad death of the Hon. N. C. Rothschild has left a gap in our membership which it will be impossible to fill. Although his first love was in another domain of science—he was the acknowledged authority upon the Siphonoptera—yet he had a good knowledge of British plants. He had all the known Irises in cultivation, and he was specially interested in British Orchids. He was a most generous helper to our Benevolent Fund. To myself his loss is most severe, as it has robbed me of a tried and genuine friend. The death of the Earl of Plymouth robbed us of a kindly helper. It was in his ancestor's garden that George Don was once employed. There have also died Mr H. Manfield, M.P. for Northamptonshire, a companion of my early days in that county; Mr N. Temperley, a genial nature-lover from Gateshead; Sir H. C. Hawley, Bart., of Lytchett Maltravers Manor, Herefordshire; Mrs Atherley of Croft Castle; Mr G. E. C. Maconchy, once a worker at the Botany of Buckinghamshire; and Mr R. Kennedy of Belfast, formerly of Guildford. A specially severe loss to British Systematic Botany is that of Mr F. N. Williams, whose chief work is the *Prodromus Floræ Britannicae*, an unfinished but scholarly publication. He also monographed *Dianthus*, *Silene*, *Arenaria*, and *Sagina*, the latter for our own *Report*. The Rev. W. Wilks, the discoverer of the Shirley Poppy, and the most excellent Secretary of the Royal Horticultural Society, is another loss to the gardening world, which also has been terribly punished by the death of the Rev. H. J. Bidder, the son of the "calculating boy," and the creator of the rockery at St John's College, Oxford.

Sincere congratulations are offered to Canon Headlam on his consecration as Bishop of Gloucester; to Mr Justice J. G. Talbot on his elevation to the judicial bench, and upon his Knighthood; to Prof. A. Henry upon his receiving the Silver Medal conferred by the National Acclimitisation Society of France; to Sir J. Colman on his success at the Horticultural Exhibition at Ghent; to Prof. J. H. Maiden of Sydney on his receiving the Mueller Medal from the Australian Association on the Advancement of Science; and to Miss Watchorn on her exhibition to Cambridge. Mr W. H. Pearsall has retired from scholastic work. May his *horae subsecivae* be of the happiest, and enable him to reveal fresh lake-land treasures from its waters. Mr D. Lumb has been appointed to fill Mr Pearsall's place. It is pleasing to know how much Miss Roper's thirteen years' work at the Bristol Museum has been appreciated. She has especially devoted herself to supplying the wild flower section in the Museum with fresh specimens for exhibition. These have been well selected and carefully named. We are glad to see Dr Briquet, the well known systematist of Geneva, elected one of the Honorary Fellows of the Linnean Society.

For literary help we are specially indebted to Dr S. H. Vines, F.R.S., for translating the German monograph on Thymus by Dr

Karl Ronniger, and for other help; to Rev. F. Bennett, M.A., to Mr T. R. Gambier-Parry, M.A., and to Mr R. H. Corstorphine for their onerous task of proof-reading.

We are under a great debt of gratitude to Mr F. Bellamy, Hon. M.A., F.R.A.S., for the immense labour he has spent in indexing the Reports from 1878 to 1923—an enormous task. When will some Maecenas arise who will pay for its publication? I have also made an index for my own use, one, alas, which it is difficult for me, and impossible for anyone else, to decipher.

Our sincerest condolence is offered to the University of Tokyo on the loss of its Library in the earthquake of 1923. Over 200,000 English books were destroyed. Donations to the purchase of works or volumes for presentation will be gladly received. They can be sent, so far as monetary offerings go, to the Tokyo University Library Committee Fund, Westminster Bank, Law Courts Branch, Strand, London, or through the Secretary. Lord Balfour is Chairman of the Committee. Cheques may be ear-marked for certain purchases.

Our foreign experts have been most helpful. We specially thank Dr Albert Thellung of Zurich for his kindly assistance. We greatly regret to hear that he has had a nervous breakdown, but we hope for his speedy restoration to health. We are very grateful to Dr J. Murr, who has again kindly examined our Chenopods; to Dr E. Almquist, who has examined the Shepherd's Purses; and sent other contributions; to Mr H. Dahlstedt, for diagnosing and describing the Dandelions, and to Professor Danser, who has kindly examined the Docks and Polygonums. Dr Karl Ronniger has placed us under special obligation by naming the Thymes, and writing such an excellent monograph of the British plants of the genus. Professor C. H. Ostenfeld, who has our hearty good wishes on his appointment, has kindly supplied various notes.

Our new members include Mr Baird, Mr C. J. Bond, C.M.G., F.R.C.S.; Prof. G. A. Boulenger, LL.D., D.Sc., F.R.S.; Mrs Brown (1924); Mrs John Buchan (1924); Mrs J. Bulteel, Capt. A. D. Chase, M.C., M.A.; Mrs G. Clutterbuck, Mr C. J. Cooke, Mr R. J. Dix, F.R.C.S.; Darlington & Teesdale Nat. Hist. Society; J. H. Dixon, Mrs Douie Urquhart, H. H. Prince F. Duleep Singh, Prof. R. Ruggles Gates, Mrs Gibbings, H. B. Guppy, F.R.S. (1924); Mrs

Fleming, Prof. F. D. Griffith, Mrs E. M. Macalister Hall, Viscountess Harcourt, Col. H. N. Head, Mrs Hichens, Mr F. E. Howard, Mr R. R. Hutchinson (1924); Rev. J. M. Hugh, Rev. S. Laing, M.A.; Lord Lambourne, Mr J. R. Lee, Rev. Canon Little, Prof. Dr Lotsy (1924); Mrs F. MacKinnon, Manchester University Bot. Department, Mrs Henry Manfield, Mr H. J. Massingham, Mr J. Matthews, Mr R. Melville (1924); Rt. Hon. Sir Alfred Mond, Lady Dorothy Meynell (1924); Lord Moreton, Rev. D. P. Murray (1924); Mrs Newman, Mr Miller Christy, Major R. Orme, Mr J. A. Rose, M.A.; Baron Lionel de Rothschild, Mrs C. N. Rothschild (1924); Mr Norman Ritchie (1924); Miss Ryle, Viscountess St Cyres, Mr H. S. Salt, Mrs Sanderson-Furness, Mrs Scholberg, Mr W. A. Sledge (1924); Mr Colin Trapnell, Miss Trower, Lady Margaret Watney (1924); Mrs Hugh Willan (1924); Mr E. B. Wilkinson, and Dr J. Stirling Young.

My own field work of 1923 in Britain, though it covered all the British counties save Rutland, Lincoln and Hereford, was not very successful. In March I went to Penzance in order to see *Hermodactylus* in flower. This, under the guidance of Mr Thurston, was duly accomplished in superb weather on one of the fine days of the year. The plant was growing freely with *Narcissus major* and *Galanthus*, and doubtless, although now quite naturalised, owes its origin to an old garden probably over a century ago. We visited the beautiful garden of the Rev. Boscawen, where a scarlet passion flower in blossom was climbing up the house, and where the pride of New South Wales, the Waratah, was in fine bloom. The garden was a mass of colour, and feared no rival even in Cannes or Mentone. It was difficult to believe we were in England. On the Tuesday I saw the *Romulea* in blossom at Dawlish. In early April I went to Gower in order to search for it where Mr Cookson gathered it last year, but was unsuccessful. *Potentilla verna*, *Lithospermum purpureo-caeruleum*, *Helleborus foetidus*, *Scilla verna* and *Viola rupestris* gladdened the eye. Two days we occupied in this vain search. Then we went on to Fishguard where we saw an alien Composite quite naturalised on the rocks near the station. From that very comfortable hotel St David's was visited and then Haverford West and Tenby. Near the latter place we gathered *Carex riparia*, *Hyacinthus hispanicus* (alien), *Allium triquetrum* (naturalised) and

Brassica oleracea in profusion. We then went to Cardiff where Miss Vachell kindly took us to Llandaff and Radyr, where Mr R. L. Smith has found so many southern aliens. At Bristol, despite the road-alterations at St. Vincent's Rocks, *Arabis scabra* still remains. In May some of the members of our Society, including the Hon. Mrs Adeane, the Hon. Mrs Guy Baring, Sir Roger Curtis, the Secretary, Miss Floyd, Mr Foggitt, the Hon. Mrs Leith, Mrs and Miss Newman, Mrs O'Callaghan, Lady Victoria and Miss Russell, Mr N. O. Simpson, Miss Trower, Miss Vachell, and Mr and Mrs Williamson made an expedition to Jersey, of which Miss Vachell has contributed an account. Mr T. Attenborough joined us on our arrival. The visit gave unqualified pleasure to those who attended. Most of the rare plants of the Island were seen, and one feels certain without damage being done to any of the rarities, as most of the members were contented with painting them. Miss Vachell, who stayed one day later than the rest of the party, added *Orchis militaris* to the Island flora, and the Secretary found *Sonchus oleraceus* crossed with *asper*, a rare British hybrid. The splendour of the Thrift and *Silene maritima* at Plemont was remarkable, and the delicate colouring of *Matthiola sinuata* was greatly admired. *Poa bulbosa* was over, but specimens were seen in Lady Davy's locality.

In early June the Dunstable downs were again visited. They afforded a great show of *Gentiana praecox* in such quantity as to give a colouring to a dry grass hollow. Here, too, occurred *Orchis O'Kellyi* and the large flowered *Cerastium vulgatum* which was discovered by Paul Richards. Later on, with Mrs Wedgwood, the wonderful expanse of colour given by *Anthemis tinctoria* on the railway bank near Hanslope in Bucks was observed. Here it is associated with two central European Hawkweeds, *Hieracium prœaltum* and *H. stoloniflorum*. Then with Misses Trower the Chippenham Fen was visited. There was no *Liparis* but plenty of typical *Orchis praetermissa* and *O. incarnata*, var. *ochroleuca* Boll. Near Six Mile Bottom *Euphorbia virgata* was seen. Wilbarrow Hill, which is in both Herts and Beds, was visited to see *Carum Bulbocastanum* in fine flower. *Phleum Phleoides* was in great quantity.

In July Scotland was visited, where I enjoyed the hospitality of the Earl and Countess of Airlie at Cortachy Castle. Through their kindness I was able to visit the glens of Caenlochen and Clova in company with Mr and Mrs Williamson and Mr C. W. James, but, as I have elsewhere said, the season was too backward, scarcely a single Hieracium showing itself. *Woodsia alpina* was, however, noticed. Near the Castle *Peucedanum Ostruthium* and *Taraxacum naevosum* were added to the Forfar flora. In Glen Dole and Glen Fee the vegetation was equally retarded, but *Oxytropis* was in fine flower.

The Artillery was in possession of the Sands of Barry so we were disappointed at missing *Corallorrhiza*, but we visited Rescobie and Restennet and saw the curious narrow-leaved form of *Cerastium arvense*, *Salix pentandra*, *Lysimachia thrysiflora*, *Cicuta* and other rare plants. From Forfar Mr Williamson took me in his motor by Dunkeld, where there were sheets of *Melampyrum pratense*, var. *hians*, Killiecrankie, Blair Athol, Kingussie and Boat of Garten, where *Equisetum hyemale* and *Drosera obovata* still grow, Carr Bridge (next week visited by that cloud burst which did so much destruction) and Inverness to Dingwall—not a bad day's work. Then on to Bonarbridge and Golspie. Between these places we found a new locality for *Moneses uniflora*. It grew in thousands and was known to the village lads as Cowslips. From Golspie we went to Berriedale, Latheron and Thurso—another good day. From Thurso we explored Scrabster and Holburn Head gathering *Hieracium orarium*, var. *fulvum*, *H. iricum*, *Primula scotica*, *Ligusticum scoticum*, *Euphrasia foulaensis*, *E. latifolia*, &c. Then we went north-eastwards to see *Saussurea* growing within a few feet of the sea level. Then the banks of the Thurso river were searched and *Carex aquatilis* in various forms was seen, while the stream here and there showed *Potamogeton nitens* in variety. The rosettes of *Ajuga pryamidalis* were observed and there was plenty of *Ribes alpinum* in the hedgerows. Another day was spent in visiting Dunnet links where *Juncus balticus* abounds. *Primula scotica* and *Viola Pesneaui* also occur. Then to John O' Groats where *Carum Carvi* is plentiful, also *Pneumaria maritima*, but the trippers have taken too heavy a toll of the latter. In a ditch by the roadside grew the Magellan *Senecio Smithii* which I saw there five years ago, and on the way to Wick *Heracleum villosum* is naturalised. By the Wick river we gathered, in heavy rain, *Carex salina* and *C.*

aquatilis, and in the Wick meadows in the grass I got fine specimens of *Viola lepida*. Then we explored Scarmclett where we gathered *Deyeuxia stricta* and *Orchis praetermissa*, var. *pulchella* in splendid show and also some hybrids.

The following day we went on by Reay, Melvich and Bettyhill. This is surely one of the most flowery places in the British Isles. On July 11th *Oxytropis sericea* was in full blossom and its tufts of rosy-purple flowers were a great attraction. Then there were sheets of large-flowered *Euphrasia brevipila*, bushes of *Rosa villosa* and *tomentosa* in great variety, large-flowered, but small plants of *Vicia sepium*, *Hieracium caledonicum*, *H. protractum*, &c., and across the river Naver a hillside, covered with blown sand up to 300 feet, was occupied by masses of *Dryas octopetala*. Here I once found the hybrid *Ajuga pyramidalis* × *reptans*. In cultivated ground grew splendid *Rhinanthus major* with *Lamium mollucellifolium*. *Draba incana* was on the walls of the village and *Saxifraga oppositifolia* on rocks only a little above sea-level. In the damp sands of the Naver grew *Carex incurva*.

The next day we motored from Bettyhill by Loch Naver to Altnaharra when a long search afforded *Carex chordorrhiza*, this year in very small quantity, *Castalia alba*, var. *occidentalis*, *Carex limosa*, *Drosera obovata* and *Melampyrum pratense*, var. *alpestre*. Then we motored through grand scenery and through a country the botany of which still remains for a great part unknown, to Erriboll and round the shores of that wonderful loch to Durness where the limestone comes to the surface and *Dryas* is the common plant. We explored the Cave of Smoo and found several Hawkweeds there, including *H. rubicundum*, var. *Boswellii* and *H. britannicum*. We reached Rhiconich rather late and found the Hotel filled with fishers who are almost as dull and self-centred as golfers. The next day we had to go from the west to the east coast and back, since the Scourie Ferry was not working. Our road, therefore, took us by Loch More and Loch Shin to Lairg and Invershin and then back by Oykell Bridge where *Hieracium stictophyllum* was plentiful to Inchnadamph. Here the pasture by the stream was literally full of *Habenaria bifolia*, plenty of *H. albida* and *Orchis pratermissa*. *Dryas* was on the rocks with *Carex rupestris*. From here we climbed Ben Garve where there was plenty of *Arctostaphylos alpina*, and a few specimens of *Hieracium alpinum* and other alpines. *Utricularia ochroleuca* was near the stream. Only a very few plants of *Arenaria norvegica* showed themselves. It is to be hoped that botanists will not eradicate this little gem. On the 16th we motored from Inchnadamph to Ledbeg and Cnochan. There we saw a small pasture one mass of *Trollius. Orchis incarnata*, *O. praetermissa* and its var. *pulchella* and their hybrids were in great show. On the rocks, indeed on a wall by the road, lurked *Carex rupestris.* Quantities of the Holly fern grew among the stones. *Thalictrum alpinum* and fine *Hieracium anglicum*, var. *longibracteatum* were on the cliffs. Thence through magnificent scenery we journeyed to Ullapool. What a series of mountains between Inchnadamph and the latter place—Quinag, Canisp, Suilven, An Stack, Stack Polly, Coulmore, Coulbeg and Ben More of Coigach, most of which I have climbed but the flora of which is relatively unknown. Surely on the last will be found *Arabis alpina.* Then from Ullapool we went by Braemore, now dismantled of its fine trees, but where *Polygonum sachalinense* and *cuspidatum* have gone wild, over the dreary Diriemore to Garve, Dingwall, Beauly, Inverness, Nairn to Grantown, a big day, but we were not too tired for an after-dinner stroll through the pine woods where *Melampyrum pratense*, var. *hians* makes a bright show, as in the pastures do *Orchis praetermissa* and var. *pulchella*. On the 17th we motored from Grantown to Kirkmichael, then to Tomintoul by the Conglas Water, over the pass above 2000 feet altitude, descending to the valley of the Don at Cargill near which place *Senecio Smithii* is established, then by a picturesque route to Aboyne. In a small loch we saw some immense tussocks standing well above the water of a sedge which could be only *cespitosa*, *elata* or a form of *Goodenowii*. It was too far in to reach or even identify but eventually our resourceful chauffeur, Watson, put on his indiarubbers and waded in and obtained specimens. It proved to be *C. Goodenowii*, var. *strictiformis.* Several trees of *Populus laurifolius* were noticed on the way, and *Erica cinerea* was in brave show. We stayed at Ballater to lunch and saw *Lupinus* in great beauty on the shingle of the Dee. Then on to Braemar where we saw *Galeopsis speciosa* in plenty, and a plant or two of its hybrid with *Tetrahit.* The next day we motored from Braemar to Aberdeen, thence by Stonehaven, St Cyrus and

Montrose to Arbroath when I had to return to England for some meetings and thus missed being with Mr Williamson and the other botanists when Glen Lyon yielded *Carex microglochin*. Of this expedition Mr W. D. Miller gives an account.

At the end of July Swanage was visited. We got *Calamagrostis canescens* near the *Erica ciliaris* station, and obtained good plants of the hybrid *ciliaris* × *Tetralix* in flower. On Corfe Castle, or rather on the roadside near, we found the *Satureia* which I had noticed there many years ago. It is distributed through the Club this year. Mr Van de Weyer kindly motored us to the Chesil Beach where we found a fine fig tree. Some years ago he had also found one there but it was not the ordinary form. Studland was visited, and so was Ridge, but there was no *Scorzonera* visible. *Cotoneaster Simonsii* grew in a hedge far away from houses. In early August I paid a visit to Sir Roger Curtis at Lichfield and we visited Chartley Castle, Hoar Cross, where there was beautiful *Ranunculus Lingua*, and Wigginton, where the true *Populus nigra* grows and *Acer platanoides* is planted. Gailey Reservoir was explored. This too, had *R. Lingua*, and *Salix daphnoides*. Aquilate, Copnor and Eccleshall were visited, also Dudley Castle on the very top of which grew *Senecio squalidus*. On Wren's Nest, where there is an outcrop of limestone, we added *Bromus erectus* to the Stafford flora and there was fine *Hieracium sciaphilum*. On the tips at Tipton, Wallsall, etc., *Senecio squalidus* has become thoroughly established and brightens that dismal district.

Next I determined to gather *Carex microglochin* so went up to Perth where Mr Corstorphine kindly met me and we motored to Kenmore. There was a little misunderstanding about the actual locality where the sedge was found. We knew it grew near *Carex atrofusca*, so our first visit was to the remotely situated Ben Heasgarnich at the head of Glen Lyon but we spent the day in vain. Then another corrie was explored which seemed to answer the description but this also proved a failure. Meanwhile I had made further enquiries and on Saturday my friend, Mr D. Haggart, came up and a large party of us, including Mrs Douie Urquhart, Dr and Mrs Fleming, and Mr L. Fleming, the Rev. W. M. Gillies, Mr Corstorphine, Mr T. Churchill and myself started for the Yellow

Corrie where at 2500 feet we found this newly discovered Sedge but a little over-ripe. It was tracked up the sides of the corrie to about 3000 feet. For an account of its plant associates see note under *C. microglochin*. Near Garve Castle *Avena strigosa*, sub-sp. *glabrescens* was plentiful and we saw *Polygonatum verticillatum* in fruit and the rose-flowered form of *Silene Cucubalus* by Loch Tay. *Hieracium pulmonarioides* Vill. was in flower at Kenmore as a garden escape. *Ribes alpinum* is common there. My next visit was to Naworth Castle, the romantic home of the Earl and Countess of Carlisle, where the Rt. Hon. H. F. Baker joined us. In the picturesque dell beneath the Castle grew *Petasites nivea*, and *Lonicera Xylosteum* was naturalised on the slopes. We also went to Askerton Castle, the residence of the Hon. F. R. Henley, but the season was too late for flowers. Mr Williamson then motored me to Silloth where we saw *Potentilla intermedia*, *Melilotus arvensis*, *Salvia nemorosa* and other aliens. Then we went to Seascale when Dr Hellon pointed out *Gentiana baltica*, and where we saw *Geranium lancastriense*. Dr Hellon also showed me a curious form of *Plantago* which awaits further study. We motored by the Vale of Lorton. where *Rosa hibernica* was plentiful but barren and where *R. mollis*, var. *Grenieri* occurred, to Keswick, on the way seeing the home of *Lychnis alpina* and gathering *Asplenium septentrionale*. At Seascale *Fumaria Bastardi* was found.

In October a short visit to the Rev. J. Freshfield enabled me to see *Taraxacum naevosum* at Hursley, in Hampshire, and to hear of *Draba muralis* as a garden weed in the Nursery at Winchester. My last visit was to Westonbirt for the glories of the autumn colouring.

PLANT NOTES, Etc., FOR 1923.

(*Mostly New Plants to the British Isles or Notes on British Species inserted here for Convenience of Reference.*)

Abbreviations.—† before a name signifies the plant is not native; × = a hybrid; ± more or less; ! after a locality, that the Secretary has seen the plant there; [ ] that the plant is not British or the record is doubtful; *Ann. Bot.* = *Annals of Botany; Bot. Abstr.* = *Botanical Abstracts; Gard. Chron.* = *Gardeners' Chronicle; Ir. Nat.* = *Irish Naturalist; Journ. Bot.* = *Journal of Botany; Nat.* = *The Naturalist.*

22. Ranunculus acris L., var., sub-var. or forma minutiflorus Druce. (*Rep. B.E.C.* 469, 1916). A plant coming under the name is sent by Mr J. Parkin from Brayton, Cumberland. He says "It is fairly common this year, the flowers are undersized, and the stamens have been arrested in their development. The plant is functionally female only. As a rule all the flowers on a single plant are affected the same way. Here and there I have noticed plants with flowers somewhat intermediate. *i.e.* stamens only partly arrested, but generally the difference between the ordinary form and this depauperate one is very marked. The plants of the latter can be quite tall and robust looking and there does not seem any difference in the vegetative features. They look like setting seed." John Parkin, *in litt.*

47. R. Ficaria L. L'Etude Expérimentale sur la Tubérification et la Stérilité de la Ficaire, R. Dostal in *Preslia* 32, 1923. He finds that the fertile flowers have larger corollas (36 mm.) than the sterile (24 mm. only) and that the sterile are darker in tint. En résumé—la stérilité de la Ficaire est un phenomène corrélatif, mais d'une tout autre nature que l'on suppose d'ordinaire.

Var. FLORE PLENO. Near Welbeck, Notts, R.W. GOULDING. A pretty form which is of rare occurrence in Britain. I saw it as a pot plant on the table of a relative of the Mikado at Tokyo.

48. CALTHA PALUSTRIS L. A form with more rounded sepals is sent from Aldbourne, Wilts, by Miss TODD.

72. BERBERIS VULGARIS L. Much has been written about the danger there is of allowing this plant to grow in agricultural areas. The U.S. Dept. of Agriculture has issued Circ. n. 269 showing how its eradication prevented Black Rust in Western Europe. It is suggested that the best method of eradication is by means of common salt. Ten pounds placed on the crown will kill an ordinary bush. Weed-killer, consisting of arsenite of soda, is also effectual. It is said that English farmers practically eradicated it from the Midland counties 200 years ago. It is now certainly very local there. Every English plant pathologist believes that the destruction of the Barberry has solved the black-stem rust problem whereas in Wales, especially Pembroke, Cardigan and Carmarthen, where there is still much Barberry, there is a greater number of outbreaks of rust, as is given in detail from W. H. Broadbent's valuable researches. Denmark, Sweden and Norway have prevented rust by destroying Barberry. But in Southern Italy and especially in Greece where *Berberis cretica*, even at 3000 feet elevation, grows plentifully there is much disease in the corn from this cause, even wild grasses being rotten from it. An instance is cited which shows that a great outbreak of rust started from one Barberry bush. The spores travelled in one direction for five miles. The total wheat area infected was 963 acres and the amount of wheat sank from 21 bushels to 8 bushels. The combined money loss was over 1200 dollars. In Minnesota the spores were carried over ten miles. In the Farmers' Bulletin, n. 1058, 1923, the Department have issued directions for destroying this pretty but dangerous shrub. The loss from the Rust in 1916 in the States is estimated at 200,000,000 dollars, almost as much as that country receives from Britain for her war debt. The Japanese *B. Thunbergii* is harmless, not so the American *B. Aquifolium*. A list of other rust-carriers is appended.

80. PAPAVER RHOEAS L. Mr WILKS gives this account of his production of the Shirley Poppy. "In 1860 I noticed in a waste

corner of my garden, abutting on the fields, a patch of the common wild Poppy, one solitary flower of which had a very narrow white edging to the petals. This one flower I marked and saved the seed of it alone. Next year, out of perhaps 200 plants, I had four or five of which all the flowers were white-edged. The best of these were marked and the seed saved, and so on for several years, the flowers all the while getting a larger infusion of white to tone down the red until they arrived at quite a pale pink, and I obtained one plant that was absolutely pure white in the petals. I then set myself the task to change the black central portion of the flowers, the anthers, stigmatic surface and pollen from black to yellow or white and succeeded at last in obtaining a strain with petals varying from the brightest scarlet to pure white, with all shades of pink between, and all possible varieties of flakes and edged flowers, and having golden or white stamens, anthers, stigmatic surface, and pollen, and a white base to each petal." *Gard. Chron.* 149, 1-23.

80. P. RHOEAS L., var. HOFFMANNIANUM. Under the name *Papaver sylvestris*, in *Gard. Chron.* 148, 1923, there is an excellent figure which Mr Savage has reproduced from one of the beautiful paintings made by Jacques Le Moyne de Morgues about the year 1576. This shows the scarlet petal having a black blotch at the base, the upper margin of the blotch having a fimbriate edge of pure white. The size of the painting is 10¾ in. by 7½ in. The beautiful set of water-colour paintings is in the Victoria and Albert Museum. This var. was common at Frilford, Berks; near Blisworth, Northants, and Stone, Bucks, this year, G. C. DRUCE.

Var. AEGADICUM (Fedde). Witney, Oxon, G. C. DRUCE.

Var. OMPHALOPHORUM (Fedde). Headington, Oxon, G. C. DRUCE.

Var. SUBCAUDATIFOLIUM (Fedde), forma RUFO-NIGRESCENTE. This has the long, nearly simple, terminal leaf-lobe of the type var., but is clothed with reddish-black hairs. Frilford, Berks, G. C. DRUCE.

Var. IMMACULATUM Kuntze. A common form at Princes Risborough, Bucks, G. C. DRUCE.

120 (2). MATTHIOLA OXYCERAS DC. Syst. ii., 173. Alien. Damascus, Syria; between Aleppo and Mosul; Persia. Hayle.

Cornwall, 1922, Miss TODD; Sleaford, Lincoln, 1922, Miss LANDON. Characterised by caule erecto ramoso glanduloso, foliis velutinis sinuato-repandis superioribus integris siliquis teretibus subvelutinis glandulosisque tricuspidatis, cuspidibus lateralibus subreflexis. Near to *M. lividus* and recalls *M. tristis* in its flowers.

167. COCHLEARIA. Miss M. B. CRANE and Miss A. E. GAIRDNER in *Journ. Genetics* xiii., n. 2. These workers find that *C. officinalis* and *C. alpina* have 28 chromosomes, *C. danica* 42, and *C. anglica* 49-50, all the numbers thus being multiples of 7. They have also made crosses between the various species. The range of variation in the F2 offspring is in some cases greater than the combined ranges of the parents. The specimens of *anglica* were obtained from Hayling Island, and the offspring proved fairly constant. The Blakeney *anglica*, where *officinalis* also occurred, is very variable, due, as the authors suggest, to crossing with *officinalis*. This natural hybrid was recorded in *Rep. B.E.C.* 186, 1915 (published in April 1916), having been found by Mr T. A. Briggs (see *Rep. B.E.C.* 9, 1872-4), and named by me × *C. Briggsii*. Subsequently I found that this hybrid had been named *C. hollandica* in December 1915 by Th. Henrard, and this is the name it should bear. Miss Crane and Miss Gairdner could not succeed in crossing *C. danica* with *anglica*, but the hybrid *officinalis* and *danica* has been freely obtained. Professor Udney Yule sent plants from Cornwall of *danica* which showed some interesting modifications—(1) similar to the Hayling plant; (2) with the upper surface of the leaves concave; (3) a form with smaller leaves and more prostrate growth. Natural seeds taken from these three forms gave very uniform offspring. It may be remembered that Mr Beeby had a natural cross in his garden of *officinalis* and *micacea* (see *Rep. B.E.C.* 510, 1896). He there suggested that *C. alpina* might be found to cross with *C. officinalis*. The authors of this important paper give descriptions of the three species, and the results of their experimental crossings. It is to be hoped that further researches will be made with *C. alpina*, *C. groenlandica*, and especially *C. micacea*, in order to discover if the last be a true species and not a form educed by its habitat, and to see if *alpina* × will account for the variability of the mountain forms.

192. SISYMBRIUM THALIANUM Gay, var. BREVICAULE mihi.

Stenophragma Thalianum Celak., var. *brevicaule* mihi. Native. Found by our valued member, Mr A. WILSON, on Cautley Crag, Sedbergh, Yorkshire, at an elevation of about 2000 feet, growing in a rocky ravine of Upper Silurian rocks (Coniston Grit) in July 1922 (see *Rep. B.E.C.* 826, 1922). Mr Wilson kindly sent me specimens which led me to think it a distinct variety. He obtained seeds which he grew in his garden at Sedbergh, and sent me fresh flowering and fruiting specimens in July 1923. They had remained practically unchanged in cultivation. The elevation at which it grew was above any previous English record, but it has been found at 2500 feet in Perthshire, and 8000 feet on the Sierra Nevada. Description: Plant short, with the habit of *Erophila verna*, glabrescent; stems very short (½ inch), wiry, flexuous, bearing about 10 flowers; leaves in a dense rosette, sharply but remotely denticulate, glabrous; pods slender, nearly terete, glabrous, on short (¼ inch) pedicels, the lower ones much overtopping the upper.

193 (2). S. MULTIFIDUM (Pursh) Macmillan. Alien, N. America. Bristol, W. Gloster, 1922, GAMBIER-PARRY.

226 (2). DIPLOTAXIS CATHOLICA DC. Syst. ii., 632, 1821. Alien, Spain and Portugal. Bristol, W. Gloster, 1922, NOEL SANDWITH. Det. Dr THELLUNG. Characterised by " siliquis sessilibus erectiusculis; stylo subtereti, 1-2 spermo; foliis pinnatipartitis, lobis dissectis laciniis linearibus sinuato-dentatis. = *Sisymbrium catholicum* L. Mant. 93. It differs from *tenuifolia* in the compressed beak containing one or two seeds, whereas *tenuifolia* is seedless. In Spain it occurs in dry sandy places, by waysides, on walls, and in cultivated ground.

232. BURSA PASTORIS Weber. B. PINNATA (At.). Ballater, S. Aberdeen, 1923, G. C. DRUCE; near Christchurch, S. Hants, J. RAYNER. Det. Dr ALMQUIST.

250 (2). THLASPI ALLIACEUM L. Alien, Spain, France, Italy, Istria, Illyria, Croatia, Serbia, &c. A clear green, biennial plant from 1-2 feet high, differing from *arvense* in its elliptic, convex fruits, and in the stem being hairy at the base. The plant has a strong oniony odour, which it communicates to the milk of cattle

feeding on it. See paper in *Journ. Min. Agric.* xxx., Sept. 1923, with figure of the plant and seeds, by W. M. WARE, B.Sc., and J. E. CHAMBERS. Hothfield and Ashford, Kent, in great abundance. It is a vigorous seeder, averaging 8 seeds to a fruit, and an average number of 767 fruits to the plant. Vide fruiting specimens kindly given by W. M. WARE and a younger one sent by Miss COBBE.

253. IBERIS ODORATA L. Alien, Greece. Bristol, W. Gloster, 1922, Mrs SANDWITH. Det. Dr THELLUNG, who says it occurs at Eleusis in Greece. Near to *I. pinnata*, but characterised—" Herbacea glabra, foliis linearibus, dentatis basi ciliatis apice dilatatis, siliculis subrotundis, emarginature lobis acutis patulis stylo brevioribus," DC. Syst. Veg. ii., 400, 1821. De Candolle cites it from Creta, and Nyman from Eleusis, Attica, ex Heldr. *Herb. Norm.* 774. The number 774 in Heldr. *Herb. Norm.* is cited, however, by Halacsy (*Consp. Fl. Gr.* i., 106) for *I. acutiloba* Bert. Misc. 227, t. 9, f. 1 = *I. odorata* Boiss. Diagn. i., 75, scarcely of L., " cujus species in alpibus Allobrogicis, id est in Delphinatu et Sabaudia crescit." Bauhin, on whom De Candolle relied, cited it from Crete whence it has not been collected recently. Rouy & Foucaud and Archangeli (*Flora Italiana*) give no reference to either plant. Perhaps it will be safer to name it *Iberis acutiloba* Bert. until its identity with the Linnean species is clearly proved.

298. VIOLA ODORATA L., var. IMMACULATA E. S. Greg. in *Journ. Bot.* 82, 1923. Maidencombe, S. Devon, Miss C. L. PECK. It differs from *V. dumetorum* Jord. in its early and prolonged flowering, in its tall, erect growth, in its long vigorous stolons, and in the pure whiteness of the flower. The stipules are more distinctly herbaceous than in *dumetorum.*

302 (2). V. EPIPSILA Greg., and ? Ledeb. Under *V. palustris* L. Mrs Gregory (*Brit. Violets* 29) says it is scentless. Major Bates van de Weyer tells me that the Burghfield *epipsila* has a strong pansy fragrance, and that, too, is the case with Portuguese plants. Perhaps the latter may be the *V. Juressi* K. Wein, with which Mr A. J. Wilmott identifies our British *epipsila.* The Wigton *V. palustris* was without odour, and its veins were less branched than in the Berks *epipsila.*

303. V. TRICOLOR L. Studies on the Collective Species. Dansk. Bot. Tidskr. 363-416, J. CLAUSEN.

305. V. NANA Lam., Précisions sur la. E. L. GERBAULT in *Bull. Bot. de Fr.* 455, 1923.

305. V. KITAIBELIANA Roem. & Schultes Veg. Syst. v., 383. W. C. BARTON affirms that the type as well as the var. *nana* DC. occur in Jersey. These larger specimens are what *nana* grew to in my garden. Probably *nana* is only a dunal form. *Kitaibeliana* must be very close to *V. Olonensis* Genev. Mem. Soc. Acad. Angers v., 8, which Rouy & Foucaud (*Fl. Fr.* iii., 49) say differs from *nana* —" Plante plus robuste, à tiges plus élevées et à pédoncules moins divariqués." Rouy & Foucaud describe this as a sub-var. *major*. They also place *derelicta* Jord. under *Kitaibeliana*.

360. LYCHNIS DIOICA L. Miss K. B. Blackburn of the Botanical Department, Armstrong College, says (*Nature* 688, 1923) that Strasburger found that both sexes possessed twelve pairs of chromosomes in the somatic cells. In the heterotype division he found one pair of bivalents much larger than the others, but the individual members of this pair were of equal size. Miss Blackburn finds that in *L. alba* there are also 24 somatic chromosomes, of which two are larger than the rest. In the female plant, at the reduction division, these two appear similar; thus the daughter nuclei are alike. In the male, however, the two larger chromosomes differ from one another in size and shape. " Since *L. alba* is so closely related to *L. dioica*, in which Shull has demonstrated sex-linked characters with the male heterozygous for sex, it seems more than probable that we have here a definite case of an XY pair of chromosomes in the male with a corresponding XX in the female. This is the first definite record of sex chromosomes in a Dicotyledon." Miss Blackburn promises a full account of this and other species of *Lychnis* and their hybrids at an early date, and her results cannot fail to be of value.

360. L. DIOICA L., An Apocarpic Plant of. R. SNOW in *New Phyt.* 156, 1923.

371. CERASTIUM VISCOSUM L., forma nova MACROPETALUM.

Petals exceeding the sepals by 2 mm. or more. Abbots Leigh, Somerset, 1923, Mrs WEDGWOOD; Swanbourne, Bucks, 1899; Finstown, Orkney, 1920, G. C. DRUCE.

Forma ROTUNDATA mihi. Leaves very blunt, 10 mm. x 6.50 mm.; 15 mm. x 10 mm.; 20 mm. x 14 mm. Bembridge, Isle of Wight; Burnham Beeches, Bucks, 1898; Oxford, G. C. DRUCE.

Var. ELONGATUM Druce in Camb. Brit. Fl. 51. Differs from the type not only in its laxer but in its elongated inflorescence and longer pedicels. Lerwick, Shetland, G. C. DRUCE.

Forma INTERRUPTUM. Inflorescence elongated, sublateral, with flower clusters interruptedly arranged along the stem. Vale, Guernsey, 1923, TRAFFORD.

374. C. TETRANDRUM Curt., var. EGLANDULOSUM Salmon in *Journ. Bot.* 90, 1923. Mr Salmon describes this variety, which he has seen from Cornwall, S. Devon, Isle of Wight, Caithness, Shetland, Orkney, and Cork, for plants which have non-glandular hairs. Rouy and Foucaud (*Fl. Fr.* iii., 215) wrongly, I think, make *C. tetrandrum* subordinate to *C. pumilum*, the super-species being described as "velue-glutineuse." The subordinate *tetrandrum* is laconically diagnosed "plante irregulièrement dichotome; bractées toutes herbacées, poilues même au sommet," and under this a var. *glabrum* R. & F., which is glabrous and has shorter petals and pedicels. One wonders whether this or *eglandulosum* would bear the test of culture. The locality given as Point of Sataford in Shetland is perhaps meant for Saxaford.

396. ARENARIA VERNA L. Mr CLARENCE ELLIOT (*Gard. Chron.* 183, 1923) recommends this lead-loving species for the rock garden where it does quite well in the absence of lead, with which it is so often associated in its native habitats in Britain.

419. CLAYTONIA PERFOLIATA L. Much correspondence has gone on in the *Gard. Chron.* in 1923 as to the use of this North American species as a winter salad. Mr J. S. Gamble (*l.c.* 212) cordially recommends it, and he also uses Lamb's Lettuce, Endive and *Campanula Rapunculus*. The last mentioned has a double advantage since the young shoots are a good salad and the mature

inflorescence is a pretty table decoration. The fleshy root is also edible.

474. GERANIUM SANGUINEUM L., var. or forma DECUMBENS mihi. *G. sanguineum* L., var. *prostratum* Syme in part, non *G. prostratum* Cav. which is *lancastriense*. *G. sanguineum*, var. *prostratum* (Cav.) Br. Pl. List. Not uncommon on the British coasts from Carnarvon northwards. It is not a windswept form for it keeps its decumbent growth if removed from its native home. Cultural tests are, however, necessary to see if it comes true from seed. It is different from the dwarf form of *sanguineum* which occurs in stony places. It grew with *lancastriense* at Seascale, Cumberland, and it occurs between Llandudno and Deganwy, etc. Here the branches lie flat on the sand but they do not root at the nodes.

526. ACER CAMPESTRE L. Schneider (Laubholzkunde ii., 230, 1907) describes var. *trilobum*, leaves three lobed, fruits pubescent; var. *lobatum*, leaves with 5 obtuse, toothed lobes, fruits pubescent; var. *acutilobum*, leaves with five acute, nearly entire, lobes, fruit pubescent; var. *pseudomarsicum*, leaves with three lobes, fruits glabrous and var. *austriaca*, leaves with acute, nearly entire, lobes, fruit glabrous. See Elwes & Henry *Trees* iii., 652.

532 (2). GENISTA HISPANICA L. Alien, South Europe. Hortal. Found as a solitary plant about six inches high, apparently self-sown, on Eartham Down, W. Sussex, about five miles from Chichester, May 1923, Miss BEATRICE FARLEY. A native of Portugal, Spain, Southern France and Liguria, it was introduced into Britain in 1759. It is remarkable on account of its heterophyllous foliage, the lower leaves being narrow and spinous, the upper lanceolate, villous and unarmed.

564. MEDICAGO SATIVA L. How to grow Alfalfa. U.S. Dept. of Agriculture, Farmers' Bulletin, n. 1283, 1923. It states that alfalfa probably originated in south-western Asia although wild forms, from which it might have sprung, are found in China and Siberia. The name is of Arabic origin and is translated to mean the best fodder. In America the name is replacing 'lucerne,' the

origin of which is not clear. It is supposed to be a corruption of the old Catalan name ‘ lusedras ’ whence comes the common name ‘ laouzerdo ’ used in the south of France. From this ‘ lucerne ’ has been derived. The name of the Swiss Canton has nothing to do with the plant. Alfalfa was supposed to have been first cultivated in Persia and brought by the Persians when they invaded Greece in B.C. 490 to provide forage for the horses and cattle. It was apparently introduced into Italy in the first century and into Spain by the Moors in the eighth century. The Spaniards took it in with them to South America and Mexico in the sixteenth century and doubtless to California and the south-west during their first expeditions. It was not until 1850, when Alfalfa was taken from Chile to San Francisco, that its rapid extension under irrigation commenced in the West. Now it is one of the most important forage-crops in the United States exceeding any other perennial crop except timothy alone or timothy mixed with red clover. The acreage devoted to it has practically doubled every ten years since 1899. In 1919 eighteen and three-quarter million tons of hay were produced. The varieties cultivated are regional strains of Common Grimm, Turkestan and Peruvian. Grimm Alfalfa was brought from Germany in 1857 by Wendelin Grimm. It is a hybrid of *M. sativa* with the yellow flowered *M. Falcata*. It has a valuable hardiness, in part derived from *Falcata* and in part to the natural selection that has taken place under the severe climatic conditions to which it has been subjected since its introduction into the States. Another hybrid, the Cossack Alfalfa, with variegated flowers, is also grown. Most valuable and detailed advice as to its cultivation is given in this practical Bulletin.

573. M. LITORALIS Rohde, var. INERMIS Moris. Det. A. THELLUNG. Alien, Western France, S. Europe. Barry, Glamorgan [n. 68], 1922, R. L. SMITH. Differs from the type “ Légumes inermes ou légèrement tuberculeux aux bords.”

643 (6). DORYCNIUM RECTUM (L.) Ser. *Bonjeana recta* Reichb. Alien, Portugal, Spain, South Europe. A pretty plant, sometimes a yard high, with the small flowers aggregated into a compact head, the wings and standard pale rose and the keel blackish-purple.

The smaller leaves and longer, narrower pods, distinguish it from *D. hirsutum.* Barry, Glamorgan [114], R. L. SMITH.

643 (7). D. HERBACEUM Vill. Alien, Central Europe, Turkey and Asia Minor. The flowers-heads consist of about 15-20 flowers which are pale blue, not touched with black at the tip, as in its ally, *D. suffruticosum.* Barry, Galmorgan. [103], R. L. SMITH.

645 (2). LOTUS CRETICUS L. Alien, S. Europe, Spain, Portugal, Malta, Syria and North Africa. Near to *L. edulis* but perennial and with a longer, cylindric, narrower pod and unequal calyx-teeth. Barry, Glamorgan [105], R. L. SMITH.

681 (2). VICIA BENGHALENSIS L. History and Seed Production of Purple Vetch. U.S. Dept. of Agriculture, Circular 256. 1923. The first Purple Vetch seed was received by the Bureau of Plant Industry, U.S. Dept. of Agriculture. from Naples, Italy in 1899, numbered 4244, and in December of that year seeds of *V. benghalensis* n. 3954 and in November of the next n. 5576 were received. Seeds of the last were used in Berkeley, California and Tucson, Arizona. The yield was found to be good and the demand for seed became very great. To show how wonderful has been the result of this experiment it may be said that in 1921 about 1,000,000 pounds were produced in north-western California alone, 125,000 pounds being also grown in Western Oregon. A figure of the plant with seed-pods is given.

725. LATHYRUS NISSOLIA L., var. GRAMINEUS Beck. Fl. Nied.-Oesterr. ii., 1, 882 with pods glabrous or somewhat rough. Walton-on-Thames, Lower Morden, Surrey. Is not this the usual form of the British plant? No examples of var. *pubescens* Beck. with pubescent pods have come under observation. C. E. BRITTON.

950. ROSA SPINOSISSIMA L. × MOLLIS, var. ALBA = × R. BARCLAYANA mihi. This beautiful hybrid was found at Bettyhill, W. Sutherland, some years ago by the Rev. E. S. Marshall (*Journ. Bot.* 167, 1887) and placed by him under *Rosa Sabini.* I am glad to say that it is still abundant and occurs in an isolated mass near the River Naver on sandy soil. The stems are strongly aciculate, the

fruits are those of *mollis*, the flowers are pure white, and the leaves are hairy and very beautifully biserrate. *R. mollis*, var. *alba* occurs in the neighbourhood. I have connected the name with that of our lamented member and Rose specialist who did so much to unravel the difficulties connected with these hybrids of *mollis* and *tomentosa*. G. C. DRUCE.

953. PYRUS MALUS L., var. vel lusus ABORTIVA mihi. Sent by Mr J. H. STEPHEN from Horsham. The inflorsecence shows a very hairy calyx tube, but the petals are absent, and some of the filaments are anther-less yet, Mr Stephen says, the tree usually produces a fair crop of apples.

967. CRATAEGUS OXYACANTHOIDES Thuill., var. CUNEATIFORMIS mihi. Stokenchurch, Oxon [AA 254]. Differs from the type in its long, narrow, very cuneate leaves, which are long lobed only at or near the apex. G. C. DRUCE.

973 (2). AMELANCHIER ALNIFOLIA Nuttall in Journ. Soc. Phil. ii., 22, 1834. *A. florida* Lindm. Bot. Reg. t. 1559. *Aronia alnifolia* Nutt. Gen. i., 306, 1818. Alien, N. America. Hortal. In a wood near Midhurst, Sussex, June 21, 1923, A. WEBSTER.

973 (3). A. LAEVIS Wieg. Shad Bush, N. America. Alien, N. America, in cool ravines of the Northern States and Canada ascending to 5,500 feet. Hortal. A planted, ornamental tree up to 40 feet high found by Mrs THOMPSON in the middle of a very rough bit of heath between Elvetham and Minley in N. Hants, June 1923. It is the *A. canadensis* of many authors, in part, not of L. from which it differs in having, when young, less tomentose leaves, in flowering slightly later, that is when the leaves are nearly half grown, in having glabrous not tomentose racemes, in the fruit being succulent and sweet not dry and tasteless, and in the leaves being less acuminate. See Sargent's *Trees of N. America* 394. Mrs Thompson says there are two trees about the size of a large hawthorn on the heath about 40 yards apart, looking quite wild. The leaves colour very beautifully in the autumn.

1027. DROSERA LONGIFOLIA (as INTERMEDIA) and D. ANGLICA, forma PUMILA Kihlm. CARL G. AHN in *Bot. Not.* 99.

1073 (2). CIRCAEA INTERMEDIA Ehrh. If this be kept as a distinct species, its earlier name, according to Fernald in *Rhodora* xix., 85-8, 1917, and Schinz & Thellung in *Viert. Gesell. Nat. Zurich* 297, 1921, is *Circaea canadensis* Hill Veg. Syst. x., 21, 1765 with which they say it is identical. By many botanists *intermedia* is considered to be a hybrid, but *canadensis* occurs in the absence of one of the alleged parents.

1080 (2). ERYNGIUM PLANUM L. Alien, Eastern Europe. Hortal. Det., with some doubt owing to the specimen lacking the lower leaves, by Dr THELLUNG. Known in cultivation since the time of Gerard. The flower is figured in Nicholson's *Dict.* iii., 530.

1099 (2). APIUM LEPTOPHYLLUM (Pers.) F. v. Muell. T. A. SPRAGUE in *Journ. Bot.* 129, 1923 gives a good history of the species, showing that it is of American origin as given in the *Adventive Flora of Tweedside*. It was first recorded as occurring in Britain at Galashiels in *Rep. B.E.C.* 324, 1913. This is not cited by Mr Sprague. It was determined by Dr Thellung and exhibited by Miss Hayward, its discoverer, at the Linnean Society in 1914, as *Apium Ammi*, a name used by Urban. It is very remarkable that an American species should so early reach Italy since there is a specimen, Penzig says, in Cibo's Herbarium, which was probably collected before 1540. This Herbarium also has the Maize and Prickly Pear. A lengthy and interesting enumeration of its distribution is given, but England may be added since Miss Cobbe found it at Bedminster and Hull, and Mr Robinson at Watton, Norfolk (*Rep. B.E.C.* 381, 1918; 125, 1920 and 728, 1922). Its source of origin at Galashiels was doubtless Argentine or Bolivian wool, at Bristol it may have come from the West Indies with fruit, but Mr Sprague says that it may come with ship's ballast or guano. We hope this will not be the last of such useful notes even on " rubbish-heap " plants.

1119. CHAEROPHYLLUM TEMULUM L., nov. var. or sub-var. CHRYSEUM. Differs from the type, which is described in all floras as white flowered, in having the flowers of a *Pastinaca* colour. It does not appear to differ in leaf, stem or hairs, which are as in the normal plant. *Chryseum* must be of very rare occurrence. I found at first near Northcourt, Abingdon, Berks in 1898 as a solitary plant, but the ditch in which it grew was cleared out and subsequent visits failed to reveal it for a second time. It is so distinct in appearance as to suggest a different species. This year Dr Pegler has kindly given me a specimen of the same variety which he found on June 7, 1923, at Drewsteighton, Dartmoor, Devon, to which I give the name *chryseum*. G. C. Druce.

1153. Heracleum villosum Fisch. is excellently illustrated in the *Gardeners' Chronicle* 52, 1923 under the name *H. giganteum*.

1229. Dipsacus sylvestris L. The Common Teasel as a Carnivorous Plant. Miller Christy in *Journ. Bot.* 33, 1923. A very readable paper in which the writer states his belief that the liquor in the teasel cups definitely attracts and stupifies insects and other visitors, and that the plant derives actual benefit from the absorption of the resulting highly nitrogenous liquor which the cups contain.

1248. Bellis perennis L., The Caulescence of. C.C. Lacaita in *Journ. Bot.* 99, 1923 shows, inter alia, that the variety or species *hybrida* is not of hybrid origin but is a caulescent state depending upon external conditions. The name may therefore disappear from our *List*.

1258. Aster Tripolium L. An interesting observation is given by Prof. J. Massart in his recent work on the Botany of Belgium, namely, that in the flooded area *Aster Tripolium*, var. *discoidea* is the prevailing form, but as the marsh dries a fringe of the typical blue-flowered form appears on the more fertile less saline soil.

1286. Pulicaria uliginosa Hoffmg. & Link = P. arabica (L.) Cass., var. hispanica Boiss. Alien, Lusitania, Greece, Egypt, Crete, Arabia. Cardiff Docks, Glamorgan, G. C. Druce. Det. Dr Thellung. Allied to *P. prostrata* but much more divaricately branched, often prostrate; leaves cordate, amplexicaul, smaller and narrower; peduncles longer and more thickened; bracts small; ligules broader and more spreading.

1286 (20). BUPHTHALMUM SPECIOSUM (Schreber Dec. 11, t. 6, 1766) ?nov. comb. *B. cordifolium* W. & K. Pl. Rar. Hung. ii., 117, 1805. *Telekia speciosa* Baumg. Enum. Pl. Trans. iii., 149, 1816. Alien, Europe. Hortal. Glasgow, 1922, R. GRIERSON. This was previously found near Beauly, at Lovat Bridge, Easterness, by the Rev. J. ROFFEY. See *Rep. B.E.C.* 15, 1914.

1295. XANTHIUM SPINOSUM L. Mr W. B. TURRILL tells us that fruits of this species have been discovered in prehistoric deposits near the village of Bogorow, 15 km. east of Sofia. The fruits had been collected in considerable quantity and stored as if for use as food or fodder. The deposits are of neolithic age. This discovery proves that *Xanthium* is of European and not of American origin. Following Thellung (*Fl.Adv. Montpel.*) I said in *Adv. Fl. Tweedside* it was " probably of American origin " but intimated that Godron thought it was originally from Northern Africa.

1295 (3). X. ECHINATUM Murr in Comm. Hort. Gott. vi., 32, 1783-4. Det. Dr THELLUNG. Alien, N. America. Cardiff Docks, Glamorgan, G. C. DRUCE. In the *Index Kewensis* it is put under *X. canadense*.

1325 (2). ANACYCLUS PROSTRATUS Pomel Nouv. Mat. Fl. Alg. 53. *Anacyclus valentinus* L., var. *prostratus* (Pomel). Det. as sub-species *A. prostratus* (Pomel) in Vierteljahrsschrift Naturl. Ges. Zurich, lxiv., 806, 1919 by Dr THELLUNG. Alien, Algeria. Bristol, Gloster, N. SANDWITH.

1325 (3). A. DISSIMILIS Pomel, *l.c.* *A. valentinus*, sub-sp. *dissimilis* (Pomel) Thell., *l.c.* 805. Det. Dr THELLUNG. Alien. Algeria. Bristol, Gloster, N. SANDWITH.

1344 (2). ANTHEMIS PEREGRINA L. Alien, Italy, Greece, Asia Minor. Cardiff, Glamorgan, G. C. DRUCE.

1353. CHRYSANTHEMUM LEUCANTHEMUM L., var. LACINIATUM Vis. = var. PINNATIFIDUM Lec. et Lam. Cat. 227, 1847. *C. incisum* Bertol. Native. Dry stony field, Charlbury, Oxon, July 1923 [AA. 252]. This, under Rouy's key, is described as *Leucanthemum* *vulgare*, var. *laciniosum* (Arv.-Touv. as a sp., 1871) having the basal leaves pinnatifid or sub-pinnatipartite, the stem leaves incise-dentate or sub-pinnatifid, the divisions dentate or pinnatifid, spreading, the calathides, flower-heads, large and borne on long peduncles, the phyllaries broad, brown, with scarious border, the outer narrow-lanceolate, pointed. Bertolini's *incisum* is described (*Arch. Fl. Ital.* 675) as having the lower leaves pinnatifid (pennatofesse) with incise-dentate divisions. Visiani's description in *Flora Dalmatica* ii., 86, 1847 runs " foliis caulinis omnibus oblongis pinnatifido-laciniato acutis achenii radiis papposis."

1393. SENECIO AQUATICUS × JACOBAEA Druce. This hybrid, discovered by Mr W. H. Beeby in Shetland (Herb. South London Bot. Institute), was published by me in Rep. B.E.C. 17, 1914, with the suggestion that to it may belong the *S. aquaticus*, var. *dubius* Druce Fl. Berks 294, 1897 which differs from *aquaticus* in the achenes being slightly hairy and in the hairs not being confined to the shallow ridges. Prof. Ostenfeld kindly sends the following note:—" When I was staying at Elstead, Surrey, in the summer of 1920 I observed that when *Jacobaea* and *aquaticus* were growing together in a wet place, a river bank of the River Wey, at a farm called Somerset Farm, a number of intermediates were present. I have no doubt that we have here the hybrid *S. aquaticus* × *Jacobaea* of which I have not any previous record. The time of flowering, and the degree of partition of the leaves were intermediate between the supposed parents. The achenes were faintly hairy as in *aquaticus*, not densely hairy as in *Jacobaea*, and the involucral leaves—of which the photos give three series—were intermediate." The situation in which it grew is similar to that where I gathered the var. *dubius* in the meadows near Wytham and in the Kennet meadows at Southcote. To this I believe belong plants which grew near Bodorgan in Anglesey. In *Rep. B.E.C.* 290, 1915 this form is reported by the Hon. Mrs Ivo Fiennes from near Hambledon, and there I said it might prove to be this hybrid. In all these cases both species grew together. Prof. C. H. Ostenfeld's note gives a much greater definiteness to the record of the hybrid which we may now claim with some degree of sureness as a British plant.

1393 (2). S. ERRATICUS Bertol. Amoen. Ital. 92. *S. Jacobaea*, var. *erraticus* Beck. Fl. Nied.-Oesterr. 1222. *S. barbaraeifolius* Krock. (but the binomial is not satisfactorily established, testibus Rouy & Camus). *S. aquaticus* Sm. & Sibth. Prod. Fl. Gr. ii., 178. Sub-sp. *S. aquaticus*, race *erraticus* Rouy & Camus Fl. Fr. viii., 336. *S. divergens* F. Schultz Arch. 10, 1872. See *Rep. B.E.C.* 35, 1917 where there is an account of its being recorded for Guernsey by Gay in 1832. This September Mr C. Trapnell sent me some plants which he gathered near Lyndhurst, S. Hants, growing with *S. aquaticus* and *Jacobaea* which reminded me of this plant. I submitted specimens to Dr Murr and to Kew each of whom named it *S. barbaraeifolius* Krock. The plant is very critical as we have to deal with the var. *pinnatifidus* of *aquaticus* and the hybrid of *Jacobaea* and *aquaticus*. Brébisson says it differs from *aquaticus* in its stronger and less hairy stem; its larger number of slender, open and divaricate branches; in the terminal segment of the leaves being broad, ovate and rounded at the apex, in its smaller flower-heads and in the leaves being of a more sombre green. The Abbé Coste (*Fl. Fr.* ii., 300) gives the contrasting features. *S. aquaticus*—Rameaux du corymbe étalés-dressés; lobes latéraux des feuilles caulinaires obliques. *S. erraticus*—Rameaux du corymbe étalés divariqués; lobes latéraux des feuilles caulinaires écartés de l'axe à angle droit. In the floral characters the Hampshire specimens agree with the description but the stem-leaves are not well shown in my specimens so I prefer to wait, before accepting the name, till I have seen the plant growing. The achenes are nearly glabrous, but there are a few hair-like processes on the ridges when seen under a one-inch objective. I should not be surprised to find it of hybrid origin. It may be rememberd that Babington in the early addition of his *Manual* had a var. *major* of *S. aquaticus* which he queried as *erraticus* but, in later editions, he withdrew the varietal name and the suggestion.

1426. CIRSIUM ERIOPHORUM Scop., sub-sp. BRITANNICUM Petrak in Bibliotheca Botanica, heft 78, Stuttgart, 1912. This, although it was reviewed in *Rep. B.E.C.* 361, 1913, has evidently escaped the notice of some of our English botanists, since our *Reports* have no general index. Cf. Thompson in *Rep. Wats. B.E.C.* 1922-3 where it is said that the Monograph is not yet published. It may be that

Petrak contemplates a new edition, but in the one referred to he deals very critically with *C. eriophorum* which he splits into 7 sub-species, our English plant being described under a doubly unfortunate name *britannicum* which he diagnoses " capitula ovata raro ovata globosa mediocria vel magna. Involucri parce arachnoidei foliola abrupte sub spinula in ligulam parvam ovatam vel ovate rotundate dilatata," as already given in these pages. *Britannicum.* as a trivial, is doubly unfortunate since, strictly speaking, our plant is English, not British. It is true Petrak (*l.c.*) cites Scotland for it but the authority in Lightfoot's *Flora Scotica* is erroneous being taken from Sibbald who said it was found " by the seaside between Blackness and Queensferry." Indeed Lightfoot himself queries it. If it were ever found there it could only be as an alien, but it is probable that the hairy form of *lanceolatus*, which does occur there, was mistaken for it. Petrak cites for his *britannicum* the plate in " Sowerby (sic) Syme *Eng. Bot.* v., t. dclxxxvii." The details of the ' hüllschuppen ' in his monograph are drawn from a Huntingdon specimen. He gives " locis apricis, lapidosis, siccis, elatioribus Britannicae et Scotiae " as its habitat, which is not correct as it is not an upland species. Even in Yorkshire its limit is given at 300 feet. The name is unfortunate for a second reason. There is already a *Cirsium britannicum* Scop. which Williams used, but wrongly, in the sense of the Meadow Thistle. The earliest trivial for that species is, as I have shown (*Rep. B.E.C.* 417, 1916), *pratense*, taken from Hudson's *Flora Anglica* 353, 1778. *Cirsium britannicum* Scop. was so named by him not, as Williams (*Prod.* 49, 1898) says, in the *Iter Gorizense*, but in the *Iter Tirolense* in *Ann. ii. Hist. Nat.* 60, 1769. A reference to that rare work will show that Scopoli had in mind not the Meadow but the Melancholy Thistle, the proper name of which is *heterophyllum* as it had already been established as *Cirsium heterophyllum* by Hill in Hort. Kew. 64, 1768, so that *C. britannicum* Scop. sinks in synonymy under *heterophyllum*. The grade of the English *eriophorum*, which Petrak suggests should be a sub-species, offers a difficulty to those of us who have not admitted such a half-way house. The *Cambridge British Flora*, while admitting sub-vars and sub-forms, does not admit sub-species, so one has to degrade them to varieties or raise them to specific rank. Much may be said for either course, but the extra expense involved by having a sub-species grade almost prohibits admitting them to a List.

1468. CENTAUREA ASPERA L., var. SUBINERMIS DC. Prod. 6, 600. " Invol. spinis nullis aut minimis vix divergentibus," reduced by Rouy to the rank of sub-var. and described in the following terms :— " Epines des folioles médianes réduites à 3-5 spinules très grêles et courtes, peu inégales, dressées-appliquées." A specimen of *C. aspera* in Herb. South London Bot. Institute, collected by F. Townsend in Guernsey in 1851, agrees perfectly with the description quoted.

Var. ANGUSTATA Rouy Fl. Fr. ix., 172. " Feuilles caulinaires moyennes et supérieures ± largement linéaires incisées ou dentées, quelquefois les supérieures entières ; calathides ordt. plus petites et plus allongées que dans a et b : péricline d'abord oblong-conique, ovoide à la maturité." Two specimens, also in the South London Bot. Institute, collected by E. M. Holmes in Jersey, August 1873, appear by reason of the very narrow foliage and elongated periclines to be this variety. To the same is also to be referred a specimen in Herb. Brit. Mus. collected by H. Watson at Vazon Bay, Guernsey, August 1852. C. E. BRITTON.

1497. CREPIS CAPILLARIS (L.) Wallr., var. ANGLICA Druce and Thellung. *C. virens* L., var. *agrestis* auct. ang. p.p., non W. & K. *C. capillaris* var. *glandulosa* Druce, nomen Rep. B.E.C. 611, 1922. Excellit capitulis majusculis, nigricantibus, et pedunculis pilis nigris elongatis glanduliferis ± abundanter vestitis ; indumentum griseum subnullum. Vera *C. agrestis* W. & K. ex descr. (See *Rep. B.E.C.* 574, 1916), differt involucri phyllis tomentosis et ad carinam setigeris (nec tamen glandulosis). *C. virens.* sub-sp. *agrestis* Rouy (excl. syn. W. & K.) differt involucri pilis longis plerisque eglandulosis, dum in nostra planta omnes glanduliferi sint. In *Rep. B.E.C.* 611, 1922, it was named var. *glandulosa*, but without a Latin diagnosis, and the name is withdrawn since there are other forms of *capillaris* which are also glandular. The var. *anglica* has been mistaken for *nicaeensis*, but in *anglica* the receptacle has not the " profunde favosum fovearum marginibus elevatis fimbriato-ciliatis " which, inter alia, characterises *nicaeensis*. Var. *anglica* is a widely distributed plant in Britain from Orkney south-wards. I have it from Wolvercote, Oxon; Ufton, Warwick; Castlethorpe, Bucks; Roade, Northants; Ware, Herts; Tubney, Berks; Uxbridge, Middlesex; Twinstead, Essex; and Lichfield, Staffs. Dr Thellung has also named, *in litt.* May 1923, a plant as forma *griseola*. "Differt a typo varietatis involucro minus nigricante, indumento griseo copiosiore," which I gathered at Lichfield, Staffs, in 1921.

1497. C. CAPILLARIS (L.). Wallr., forma GLANDULOSA Thellung. Tall, robust plants from Hayling Island [Z 540], July 1922, have been so named by Dr Thellung. It is a not infrequent British form, and has also been mistaken for the var. *agrestis* W. & K.

1638 (21). ANDRYALA TENUIFOLIA Tineo. Det. by Dr THELLUNG as *A. integrifolia*, sub-sp. *tenuifolia* Thell. in Viert. Nat. Ges. Zurich lxiv., 813, 1919. Alien, Medit. austr. Radyr, Glamorgan [n. 7], R. L. SMITH.

1645. TARAXACUM DEVIANS Dahlst. Links of Boardhouse, Birsay, Orkney, in shell pasture, H. H. JOHNSTON in *Trans. Bot. Soc. Edin.* 105, 1921-2.

1646. T. PALUDOSUM Schrank, var. LEIOCARPUM (DC. under *palustre*). Hailey, Oxon [Y. 105], G. C. DRUCE, teste DAHLSTEDT.

1646. T. BELLULUM Dahlst. Native. Sweyn Holm, Orkney, H. H. JOHNSTON in *Trans. Bot. Soc. Edin.* 179, 1922-23. It occurs also in Norway.

1657. SONCHUS ASPER × OLERACEUS = × S. PIQUETII mihi. This hybrid is evidently of rare occurrence, although Sir Joseph Hooker said that in New Zealand such intermediates occurred. It is also given from Weimar in Germany by Dr Focke. Mr A. Bennett reported this hybrid from Dumbarton, gathered by L. Watt, in *Scot. Nat.* 268, 1890. In 1917 I found some specimens, growing with both the assumed parents, in rich garden soil at Lord Glenconner's at Wilsford Manor, Wilts. This year, in Jersey, in a Tomato garden near Rozel, two or three plants occurred with both *asper* and *oleraceus*. These have been submitted to Dr Murr, and he agrees that they have this parentage. He remarks "achenia leviter transverse rugulosa, planta crassa, rigida, folia subnitentia, obscure viridia sed auriculis acutis ut in *S. oleraceo*." The plants are very striking in appearance owing to their conspicuous auricles. Many of the achenes are sterile. I have connected it with the name of J. Piquet, the well-known Jersey botanist.

1663 (2). TRAGOPOGON HYBRIDUS L. *Geropogon glaber* L. *T. Geropogon* Rouy. *T. glaber* Ball, non L., teste Rouy. Transcaucasia, Mesopotamia, N. Africa, Canaries. Alien, Europe medit. Bristol, NOEL SANDWITH. A pretty plant with rose-violet flowers. Det. Dr THELLUNG.

1686. VACCINIUM VITIS-IDAEA L., var. OVATUM. J. HENRIKSSON in *Bot. Not.* 464, 1923. This has ovate berries.

1693 (2). ERICA STRICTA Donn ex Willd. Sp. Pl. ii., 366 = E. CORSICA DC. Alien, South Europe, Spain, Corsica, Sardinia, S. Italy. Sallagh Bracs, Antrim; Donnhill, Co. Derry, R. L. PRAEGER in *Ir. Nat.*, 32, 1923. Planted or wind-blown.

1710. PYROLA SECUNDA L. For notes on this see H. Andres in Fedde Rep. Spec. Nov. Regni Veg. 21, 1923. Stud. zur Spec. Syst. der Pirolaceae. Rev. der Gattung Ramischia Opiz. Under this name Opiz separated *P. secunda*, etc., from the genus *Pyrola*, and Andres has named (*l.c.*) three vars:—*elatior* (J. Lange), Mexico; *pumila* (Paine), America, and *dispensiflora* (Neum.), Greenland.

1721. STATICE MARITIMA Mill., var. vel lusus FLORE PLENO. A very beautiful form of the holotrichous Thrift was found by Lady DAVY between Corbière and Petit Port, Jersey, in 1922. A root was brought home, and it flowered very freely this summer on a Surrey rockwork. The corolla is duplicated, the anthers and stigma being suppressed and, as many of the corollas are enrolled at the apex, it gives a raspberry look to the inflorescence.

1743. ANAGALLIS ARVENSIS L., var. PURPUREA. Plentiful on Causand seashore, Cornwall, 1923, Lady DOUIE. In this plant the corollas are a rather dull purple.

1758. CENTAURIUM SCILLOIDES (L.) Druce. Under the name

Erythraea Massonii there is a note in *Gard. Chron.* 91, 1923, recommending it as a rock-garden plant. It loves a light, fully drained soil, but at the same time does not appear happy when kept too dry. Good soakings of water during spells of dry summer weather help it greatly. It also prefers a little shade. In its Pembroke habitat it grows in full sun exposure.

1765. GENTIANA CAMPESTRIS, var. SUECICA Froelich De Gentiana libellus 92, 1796. Under the somewhat misleading name, "*G. suecica* Froelich" Mr C. E. SALMON (*Journ. Bot.* 88, 1923) describes this Gentian, and gives the contrasting features of *campestris* which he, following Murbeck, calls *germanica*. Indeed, he says that "Murbeck proposes the name *G. Wettsteinii* for the plant of our chalk downs usually known by Willdenow's name, *germanica*, but this suggestion has been generally adopted." It would seem from the context that the word "not" has dropped out of the sentence. Mr Salmon claims to have found *suecica* near the Spital of Glenshee, E. Perth, and intermediate forms from near Banavie, Westerness, and Loch Eil, Argyll. Murbeck identified Beeby's specimen from Hillswick, Ness, Shetland, as *G. suecica*, var. *islandica* Murb. This was omitted from my *Flora Zetlandica*. Murbeck raised *suecica* to the rank of a sub-species (*Act. Hort. Berg.* ii., n. 3. 10. 1892) and in *Journ. Bot.* 1, 1894, Mr Beeby made an abstract of the paper. The chief characters which distinguish *suecica* from *campestris* are that *suecica* has internodes much longer than the leaves (*campestris*, shorter or slightly longer); middle or upper stem leaves strap-shaped or oblong rounded or obtuse at apex (*campestris*, lanceolate or ovate-lanceolate, more or less acute at apex); middle stem leaves erect or erect-patent (*campestris*, spreading, the upper ones strongly so). I am afraid the characters assigned by Murbeck to *baltica* appear to break down. Of course, there is the annual and the biennial form, but the characters assigned to each do not pan out in the field. This, too, is Wheldon's experience. After much study he could not see that *baltica* was in the least worthy of specific, if indeed of varietal, rank. Two out of three of Mr Salmon's recent gatherings are said to be intermediates. I do not find that the long internodes of *suecica* are to be always correlated with patent or with rounded obtuse leaves. A Ross-shire specimen with long internodes has patent and rather sharp-pointed leaves. So, too, is another from Wexford, and in a plant from Loch Tay side with internodes 4 inches long the lanceolate acute leaves spread at right angles from the stem. Ross-shire specimens with short internodes have erect leaves which are somewhat rounded at the apex. My plant, from Garron Tower, Antrim, has a long internode and erect leaves which are quite acute. On the contrary on the Dovrefeld, I gathered what Dr Holmboe agreed was true *suecica* which is unlike any British specimen as yet seen by me. In this the corolla was more deeply cleft than in British *campestris*. It may be that, as Mr Salmon says, there is a British plant agreeing with Murbeck's description, but I should hesitate to give it, any more than I should *baltica*, specific rank, but that, of course, expresses only an individual opinion.

1776 (3). GILIA SQUARROSA Hook. & Arnott Bot. Beech. Voy. 151. *Navarretia*, cf. *squarrosa* (Eschsch.) Hook. & Arnott, *l.c.* 368. Alien, America bor. occ. Det. Dr THELLUNG. Sleaford, Lincoln, Miss LANDON. Probably introduced with chicken-corn. At first sight this plant resembles *Hemizonia pungens*.

1777. POLEMONIUM CAERULEUM, Genetic Studies in. Prof. C. H. OSTENFELD in *Hereditas*, iv., 1923. One of the variations (var. *sibiricum*) is a form with bipinnate leaves which is thought to be parallel to the laciniate form of *Chelidonium majus* (only that behaves quite constant in culture. Among the thousands which have appeared self-sown in my garden not one reversion in leaf-form occurred). He also considers *Sambucus nigra*, var. *laciniata* and the cut-leaved form of *Rubus vulgaris* to be analagous to *sibiricum*. White-flowered forms of *Polemonium* are very common in culture, and are true albinos. In the normal hermaphrodite plant the corolla is larger than in the female plant. A micropetalous form is remarkable in that the minute corolla has very deeply cut acute lobes. Cultivation of the bipinnate forms showed that the bipinnate form is recessive. The white colour is recessive to blue colour. The crossing of females with hermaphrodites showed that the offspring is mainly female with about ten per cent. hermaphrodites.

1805. LYCOPSIS, cf. ORIENTALIS. Teste Dr THELLUNG. Alien, Orient, Spain. A single specimen at Hayle, Cornwall, 1923. Miss Todd.

1815 (2). Myosotis sicula Gussone in Jersey. A. J. Wilmott in *Journ. Bot.* 212, 1923. Found by Mr F. Druce and Mr Wilmott in 1922 at the east end of St Brelade's Bay on the fixed dune between the strand and the pond. It proves, says Mr Wilmott, to be the Sicilian *Myosotis sicula* exactly agreeing with the specimens from the Loire Inférieure, Nantes. It is a small plant, 5-10 cm., and has the appressed hairs and very short style of *M. cespitosa*, but has peculiarly divaricate and flexuous branches, the corolla is minute, the nutlets only about half the size of those of *cespitosa*, being slightly more than half the length and slightly less than half the breadth. Mr Wilmott dismisses the view of Rouy, who treats the biennial French plant (except the Corsican, which he refers to *sicula*) as a var. *confusa* (*M. sicula* Gren. and Godr., non Tenore) of the sub-sp. *multiflora* Mérat of the aggregate *M. palustris* under which is also put as a sub-species *M. repens*, while *M. commutata* and *M. cespitosa* are treated as races. Rouy's arrangement does not commend itself to me. While I have felt a difficulty in making *M. repens* a full species, since there are forms which connect it with *palustris*, such difficulty is not experienced with *M. cespitosa*. Rouy, moreover, gives full specific rank to *M. sicula*, which occurs in Corsica, Sicily, Spain, Sardinia, Crete, &c., and which he says is annual. Willkomm & Lange keep all four as distinct species, and say that *sicula* differs from *cespitosa* " racemi basi non foliatis, pedicellis brevioribus, florum etiam infimorum calyce vix longioribus, calyce fructifero campanulato-truncato, corollae adhuc minoris limbo concavo. Planta in statu fructifero 0-10 pollicaris, caule erecto basi radicante racemis floribundis minus laxifloris, demum valde elongatis, caulem superantibus." There seems nothing in the Jersey plant to take it away from this. Whatever its ultimate place may be there seems no reason to dispute its distinctness from any of our previously named forms. It has a very distinct facies of its own, and well deserves a place in our flora. In another marsh, I think in St Peter's Parish, a curious *Myosotis* of the *repens* group grew, but instead of the deeper blue of *repens* it was paler than ordinary *cespitosa*. While *cespitosa*, as its name suggests, is a tufted plant, in the Amberley area it grew as quite a simple stemmed plant, and a similar one has been noticed in Berkshire. The genus needs critical working, and three or four years ago I suggested it to Mr A. E. Wade as a promising field of research.

1846. SOLANUM NIGRUM L., var. PROSTRATUM F. Ger. in Magnier Scrinia 356, 1895. St Philip's, Bristol, Miss I. M. ROPER in *Rep. Wats. B.E.C.* 209, 1922.

1869 (2). VERBASCUM OVALIFOLIUM Sims Bot. Mag., n. 1037. Alien, Reg. Caucasus. Hortal. Introduced into Britain in 1804 from Tauria. Cardiff, Glamorgan, 1922, Miss VACHELL. Det. Dr THELLUNG.

1869 (3). V. PYRAMIDATUM M. Bieb. Fl. Taur.-Cauc. i., 161. Alien, Caucasus. Hortal. Introduced into Britain in 1804. Swaythling, South Hants, 1922, J. RAYNER. A pretty plant with a large panicle of many yellow flowers. Det. Dr THELLUNG.

1879 (4). LINARIA REFLEXA (L.) Desf., teste Dr THELLUNG. Alien, Ital. merid., Afr. bor. occ. Adventive in Corsica, Gallia merid., Helv. Cardiff, Glamorgan, G. C. DRUCE.

1883. L. MINOR Desf., forma nova GLOBOSA. Mr C. NICHOLSON sent me in September a form of the species from Headley Lane, Mickleham, which he referred to in *Journ. Bot.* 263, 1923. The plants are very copiously branched from the base of the stem, and form globular tufts from about two inches high to the diameter of a cricket ball, or even a small basin. Whether it is merely an abnormal growth or one induced by a mite (of which I see no evidence) or to injury sustained in its early development, has to be determined. If seeds could be obtained the matter might be settled. As it is, the plant widely diverges from the type in its general appearance which recalls the " Rose of Jericho." G. C. DRUCE.

1884. L. SPURIA Mill., lusus PELORIA. A plant with tubular corollas sent from Sherborne, N. Hants, 1923, J. C. BOYS.

1895 (2). SCROPHULARIA SCOPOLII Hoppe ex Pers. Syn. ii., 160, este Dr Thellung. Alien, Eastern Europe, Asia Minor, Himalayas. Cardiff, Glamorgan, G. C. Druce.

1903. Digitalis purpurea L. An extraordinary monstrosity in which the corolla is much reduced in size, being shorter than the large anthers and scarcely exceeding the sepals in length, the inflorescence with about 40 flowers, Roman Villa, Fosse Bridge. E. Gloster, Mrs Irvine.

1907. Veronica officinalis L., var. glabrata Bab. A form of this, with the capsule unnotched at the top, was found at Glen, Peebles, in 1913. The same plant was sent from the same locality —where *Euphrasia variabilis* grows—this year by Miss I. M. Hayward. G. C. Druce.

1931 (11). Orthocarpus erianthus Benth. Scroph. Ind. 13. Alien, California. In a lucerne field, Frilford, Berks, June 1923, Lady Douie and G. C. Druce. A pretty and unexpected adventive, near to *Bartsia*. Det. T. A. Sprague.

1938 (2). Euphrasia atroviolacea nov. sp. G. C. Druce and D. Lumb. Plant: Small, much branched; flowers, calyces and upper bracts atro-tinted, often glandular. Stem: Slender, eglandular, mostly hidden by bracts, from 2-4 cm. high, branched below, occasionally rebranched; rarely simple. Spike: Condensed, comparatively broad, few internodes visible. Leaves: Lower very small, early caducous, thick texture; 0-1 tooth on each side; at times with clothing as long and as rank as that of *curta*; at times almost glabrous: often with short glandular hairs; upper, very small, seldom 5 mm. long, rugose beneath, 2 teeth on each side; clothing as above. Bracts: Lower suberect, about 5 mm. long, rugose beneath, at most 3 teeth on each side, more often 2; subacute; teeth acuminate; upper acute, with acute, non-aristate teeth; cuneate-based; clasping calyx and not half its length; often beset with short glandular hairs; at times almost glabrous. Calyx: With acute or sub-acute teeth, often copiously glandular; consistently overtopping its subtending bract; veins atro-stained. Corolla: About 6 mm.; nearly uniform in size and colour; upper outside part whitish, rest deep blackish-purple; tube not lengthening; style not protruding; dries well. Capsule: When mature equalling or slightly overtopping the calyx teeth. In shell sand near Birsay, Orkney, G. C. DRUCE & R. J. BURDON, 1920.

From *curta* it differs in its usually less rank clothing, in its glandular hairs, in the colour of the flower, and in its small few-toothed bracts. From *variabilis* it differs in habit, in the nearly uniform size and colour of its flowers and in its often drying blackish. From *gracilis* and its var. *primaria* it differs in its habit, its size and its glandular clothing. From *brevipila* it differs in the size of its few-toothed leaves and bracts, the colour of the flowers, the eglandular stem and its habit. From *foulaensis* it differs in all its characters, except that of drying blackish at times. From *caerulea* it differs in its habit, size of bract, glandular and eglandular clothing and colour of flowers.

1939 (4). EUPHRASIA VARIABILIS nov. sp. G. C. DRUCE and D. LUMB. Plant: Slender, starved-looking, small bracted, often sub-mealy and glandular, very variable. Stem: Eglandular, slender, 2-6 cm. high, at times simple, often much branched, sometimes rebranched; low-down adventitious branches fairly numerous. Spike: Narrow, congested in upper part, flowering or fruiting nodes up to 12, but often few; lower internodes fairly long. Leaves: Lower obovate-cuneate with one tooth on each side; terminal lobe longer than broad; base narrowly cuneate; early caducous; 7-8 mm. long; upper ovate with 2-3 obtusish teeth on each side: base cuneate; rugose beneath; variably clothed: sometimes short glandular hairs numerous. Bracts: Sub-erect, mostly quite small, about 5 mm. long, ovate, cuneate-based, markedly rugose beneath, clasping the calyx, often not half its length; lower sub-acute with 2-3 sub-acute teeth on each side; upper indigo-stained, acuminate, with 2 or 3 acuminate, sub-aristate teeth on each side; clothing very similar to that of leaves. Calyx: With narrow acute sub-aristate teeth, often copiously glandular: consistently overtopping subtending bract; veins often indigo-stained. Corolla: Very variable in size, 5-9 mm.; variable in colour from white to deep lilac-blue; tube not lengthening: style occasionally projecting; dries usually with good non-rusty colour. Capsule: When mature slightly overtopping calyx teeth.

From *campestris* it differs in lacking glandular hairs on stem, in glandular hairs being short, in amount of branching, and in the variability in size and colour of its flowers. From *Kerneri* it differs in being glandular, in colour of flowers, in non-lengthening corolla tube, in rugosity of leaves and bracts, and in texture generally. From *gracilis* and its var. *primaria* it differs in size of flowers, in amount of branching, in its rugosity, in its glandular hairs and general colouring. From *caerulea* it differs in habit, size of bracts, amount of glandular clothing, and colour of flowers.

This pretty Eyebright was first noticed by me on a visit at Glen, Peebles-shire, in September 1918, when walking in company with Lady Glenconner and the Countess of Wemyss on a sloping hillside towards Loch Eddy. Subsequently I found it in other places on the Glen estate. It was readily recognisable from its peculiar habit and often attractive flower-colouring. On my return to England I submitted it to Mr Cedric Bucknall and he remarked that "notwithstanding the likeness of some of them to *E. Kerneri* I believe they all belong to *gracilis*—those with the large flowers to its variety *primaria* Fr. The excessive branching of some of the specimens is due to the damaged main stem." He subsequently repeated this identification. Mr Pugsley did not think it "belonged to *gracilis* but possibly to *Kerneri*." At first Mr Pearsall thought it might be so. Mr Lumb has had it under observation for some time, and was convinced of its distinctness from any known British form. This year, through the kindness of Miss I. M. Hayward, who was staying in the vicinity, and to whom I gave directions as to where it grew, we received fresh specimens in good flower, and this has enabled Mr Lumb to draw up the above description. The situation is a grassy hillside on poor soil. It occurs probably from 800 to 1200 feet, and in some quantity.

The plants gathered and examined fresh in 1923 show the same variability in the quantity of the glandular clothing, in the size and colour of the flowers, in the branching, and in the much starved-looking appearance.

1994. MENTHA AQUATICA L. Mortlake, by the Thames, Surrey, J. FRASER. He sent me fresh specimens to show that it had a strong *citrata* odour. He has cultivated it, and the odour is retained.

1999. M. RUBRA Sm. × M. AQUATICA L. With *M. rubra* at Iver, Bucks, and either a cross, as Mr Fraser says, with *aquatica* as stated, or a reversion of *rubra* (itself a hybrid in which *aquatica* has a share) to *M. aquatica*, G. C. DRUCE.

2011. SATUREIA CALAMINTHA Briquet, var. VILLOSA (Boiss.) Druce in Rep. Bot. Exch. Club 618, 1922. In *Journ. Bot.* 190, 1923, Mr H. W. Pugsley, under the title of " A New British Calamint," which he identifies as *Calamintha baetica* Boiss. & Reut., gives particulars of the characters of a plant he discovered in 1900 near Swanage. In my note, *Report* 618, 1922, which was based upon the statement of a Fellow who heard the communication to the Linnean Society, and which was written before I had seen a printed account, I gave the date of its discovery as 1922. That, however, was the date of its publication. I did not realise that Mr Pugsley had found it twenty-two years before. One very much regrets to see the unpleasant tone adopted by him, and the expression he sees fit to use of my making a " serious " and " false citation " when I quote the synonym *Calamintha officinalis*, var. *villosissima*, from Willkomm and Lange's Prod. Fl. Hisp. There is nothing incorrect or false in this citation. If there had been the correction might have been less unpleasantly put. In my account of the plant, of which at that time I had seen no British specimen, I had to give the history of its earliest trivial. That is the one which appears at the head of this paper. Boissier used *villosa* as a variety in the *Voy. Bot. Esp.* 497, 1837. In copying it in the *Prodromus* Willkomm, by a slip of the pen, wrote *villosissima*, and I know of it in that form only in that work (even if it had been the earliest publication it is invalid being in synonymy), and when cited as *villosissima* it must be given as I wrote it. I have now seen the Dorset plant. So far as description goes it seems to differ from Spanish plants in not being canescent, in one of the cymes having nine flowers, which does not well answer to " Cymis paucifloris," and in the flowers not being very large. But the genus is a fluid one. It may be noted that Rouy (*Fl. Fr.* xi., 334) puts under *S. vulgaris* Rouy not only *S. Calamintha* and *S. adscendens*, but also *S. Nepeta*. In the *Index Kewensis baetica* is made synonymous with *officinalis*. Further study may prove that the Dorset plant has specific value.

The synonymy of the Calamints has been greatly confused. It is clear that *villosa* (as a var.) is the earliest trivial. It was put under *C. officinalis* by Boissier and *officinalis* is by Willkomm made = *silvatica* Bromf. = *Melissa Calamintha* L. Lange, however, puts *baetica* as a var. of *menthaefolia* Host, which = *C. adscendens* Jord. and, teste Willkomm, *Thymus Calamintha* Sm. It seems that *Calamintha* as a trivial is so liable to confusion that it will be safer to use *S. adscendens* (Jord.), var. *villosa* (Boiss.) comb. nov., and retain Bromfield's trivial for the Isle of Wight plant. I collected a Calamint at Corfe Castle on July last which, teste Marquand, is the same as Mr Pugsley's plant. I am sending it for distribution through the Club.

2027. SALVIA MARQUANDII Druce. A specimen of this, collected by W. C. Trevelyan in the locus classicus, *i.e.*, Vazon Bay, Guernsey, 1835, has recently been presented with other plants, 1250 in all, to Kew. It was in the herbarium of the late Dr George Lloyd. See *Kew Bull.* This specimen of the very local *Salvia* is the oldest one known to me.

2053 (2). STACHYS SALVIFOLIA Tenore Prod. Fl. Neap. xxiv. *S. italica* auct., non Mill., teste Dr THELLUNG. Alien, Eur. mer. Blundellsands, Lancashire.

2069. LAMIUM MACULATUM L., Peloria in. See J. KLIKA in *Preslia* 56, 1923.

2073. LAMIUM MOLLUCELLIFOLIUM × PURPUREUM, nova hybr. Garden ground at Tongue, W. Sutherland, 1917, with both putative parents. Near to the former species of which it has the calyx teeth and sessile upper leaves, but the leaves have the texture and softer pubescence of *purpureum*. It has a different tint of colour and the very long internodes and more definitely stalked lower leaves are also intermediate. The nutlets seemed sterile. G. C. DRUCE.

2082. TEUCRIUM CHAMAEDRYS L., var. HIRSUTUM Celak. Curry Mallet, Somerset, 1922, H. DOWNES in *Rep. Wats. B.E.C.* 220, 1922, teste C. C. LACAITA.

2083. AJUGA REPTANS L., var. STOLONIFERA Bogenh. Fl. Fen. 316. Ockham Common, Surrey, May 1907, C. E. BRITTON. Rouy

(*Fl. Fr.* xi., 228) describes it as " Stolons de l'année terminés par un épi florifère à fleurs ordt. plus pâles et moins nombreuses que celles des épis ordinaires," which suggests it is a condition rather than a true variety.

2083. A. REPTANS L., var. ALPINA Koch Fl. Germ. 575, 1837. On Foel Fras, Carnarvon, at about 2500 ft., H. W. PUGSLEY in *Journ. Bot.* 22, 1923. Koch (*l.c.*) briefly describes it as having " stolonibus brevibus vel nullis " with a reference to Villars *A. alpina* of the *Fl. Dauph.* ii., 347. As Mr Pugsley says, this may be the alpine bugle gathered by Johnson in 1641 and referred to by him in his " Mercurii Botanici pars altera in Cambria descriptio " of that date. This has, by some botanists, been referred to *A. genevensis*, which is a most unlikely plant to grow on a cold wet Welsh mountain. I found such a stolonless plant at about 1200 feet on the Carnedd Dafydd when I visited it in 1921, but the storm of wind and rain prevented my traversing the narrow ridge which connects it with Carnedd Llewellyn, where Johnson probably saw his plant, but I hesitated to refer it to the plant of the Dauphiny which Rouy (*Fl. Fr.* xi., 230) says is *A. fallax* Borbas, *i.e.*, *pyramidalis* × *reptans* Knaf. Rouy (in a foot note, *l.c.* 232) says " L'*A. montana* Reichb. et l'*A. alpina* Vill. Dauph. ii., 347, sont des complexes mal définis dont il n'y a pas lieu de tenir compte.

2117. CHENOPODIUM SUBFICIFOLIUM (Murr), var. SERRATIFRONS Murr, teste Murr, under sub-sp. *subficifolium*. Lichfield. Staffs, G. C. DRUCE.

2131 (2). C. STRIATUM (Kras.) Murr, var. EROSUM Murr, teste Murr. Lichfield, Staffs, G. C. DRUCE; Bristol, N. SANDWITH.

2143. ATRIPLEX LITTORALE L., var. DENTATUM Hornem., teste Dr THELLUNG. Alien. Bradford, Yorks, 1921, J. CRYER.

2169. POLYGONUM HYBRIDS IN HOLLAND. B. H. DANSER in *Nederl. Kruidk. Archief.* 156-164, 1921. (1) P. CONDENSATUM (MITE × PERSICARIA); (2) P. BRAUNIANUM (MINUS × PERSICARIA) which are British; P. HYBRIDUM (MITE × HYDROPIPER), to be sought for; (4) P. WILLMSII (MINUS × MITE) British; (5) P. LAXUM (HYDRO-

PIPER × ? NODOSUM); (6) P. LENTICULARE (NODOSUM × PERSICARIA). A difficulty arises as to the sense in which *P. nodosum* Pers. is used. Herr Danser does not seem to be aware that Persoon named *P. nodosum* as an unnumbered but asterisked plant subordinate to *lapathifolium* which is his usual custom for the sub-species grade, and queries " An a *Persicaria* specie diversum?" If meant in the sense of *P. maculatum* the earliest trivial is *petecticale* (Stokes). Cf. With. *Nat. Arr.* i., 412, 1789.

2169. POLYGONUM. Bijdrage tot de kennis van eenige Polygonaceae by B. H. Danser. Reprint from *Nederl. Kruidk. Archief.* 218-250, 1920, Ingekomen, Jan. 31, 1921. A critical examination of the species of this genus in which he quotes Meisner who says " *P. Roberti* est species mixta ex *P. aviculari*, *litorali* et *Rayi* ideoque omnino delenda." Under *P. Persicaria* L. De Bruyn's paper from the same Journal, serie i, deel 1 & 3, is cited, and Danser gives var. a. GLABRIPES, racemosum pedunculis glabris; var. b. HIRSUTUM, racemosum pedunculis adpresse hirsutis; var. c. GLANDULOSUM, racemosum pedunculis glandulis sessilibus scabris. Braun (*Flora* viii., 1824) has colour varieties, *i.e.* a. RUBELLUM, floribus rubellis, roseis, purpureis and b. ALBIDUM floribus albidis. Gunther Beck (*Ic. Fl. Germ. et Helv.*) gives also a var. TOMENTELLUM (INCANUM Gren. & Godr.), folia subtus albido-tomentosum. *P. mite*, a name which we are glad to see he retains, has two plants under it, *i.e.* (1) P. LONGIFOLIUM, foliis breve petiolatis spicis pedunculatis subpendulis incrassatis basi interruptis, floribus roseis (vel albidis) fructibusque magnis, and (2) P. LAXIFLORUM, caule firmulo, foliis subpetiolatis, latius lanceolatis, spicis filiformibus laxis, pendulis, interruptis, floribus hexandris, seminibus mediis acutis. Under *P. mite* is its hybrid with *Persicaria* = × P. AXILLARE Rigo. *P. amphibium* has two colour vars., ROSEIFLORUM, floribus laete roseis and PALLIDFLORUM, floribus sordide vel subflavide albis also a var. BRACHYSTYLUM, stylis in perianthio inclusis filamentis eminentibus and MACROSTYLUM, stylis e perianthio eminentibus filamentis inclusis. Plants may occur as ROSEIFLORUM BRACHYSTYLUM, ROSEIFLORUM MACROSTYLUM and PALLIDIFLORUM MACROSTYLUM, but it is somewhat doubtful if any of these would bear culture tests.

2195. RUMEX. Bijdrage tot de kennis Nederlandsche Rumices by B. H. DANSER in *Nederl. Kruidk. Archief.* 167-228, 1921. *Rumex aquaticus.* Danser quotes Murbeck's paper in *Bot. Not.* for 1899 in which he says there are three distinct species in *Fl. Suecica*, *R. domesticus* Hartm., *R. conspersus* Hartm. (now admitted to be a hybrid), and *R. Heleolapathum* Drejer. Lindman keeps *R. aquaticus* and *domesticus* as distinct species. It is curious that while Holland possesses *aquaticus* it should be absent from England. Danser describes P. PATIENTIA, R. ORIENTALIS, R. FENNICUS with two varieties, R. CRISPUS, R. HYDROLAPATHUM, R. SANGUINEUS, which he keeps as the type, and the common CONDYLODES as a variety. He also names vars. TRIGRANIS and UNIGRANIS, which speak for themselves, R. CONGLOMERATUS, with var. PYCNOCARPUS, characterised by " valvulis ovato-oblongis, corrugatis, ramulis divaricato-patentibus," R. OBTUSIFOLIUS, with R. FRIESII and SILVESTER subordinate. He adds two new varieties of FRIESII—UNIGRANIS and TRIGRANIS; two variations based on the colour of the leaf-veins, CONCOLOR and DISCOLOR, also a var. based on the leaf-shape, PANDURIFOLIUS, and as adventives, R. OBOVATUS Danser, R. AURICULATUS and R. DENTATUS.

2195. RUMEX. Herr B. H. DANSER has contributed (*Nederl. Kruidk. Archief.* 229, 1921 and 1-36, 1922) two papers on the Hybrid Docks of Holland. Some which he mentions should be found in Britain. Others have already been recorded. It will be noticed that he admits the hybrid parentage of *Rumex limosus* Thuill. (*conglomeratus* × *maritimus*) which Marshall strongly controverted. Danser also thinks that *Rumex maximus* Schreber is the offspring of *Hydrolapathum* and *aquaticus*. If that be correct it would seem that the British *maximus* is either adventive or incorrectly identified because *R. aquaticus* is not English and even *domesticus* is not a south English plant. The Dutch hybrids are:—(1) *R. conspersus* (*aquaticus* × *crispus*). The point here arises —does Danser use *aquaticus* in the aggregate or in the restricted sense of *domesticus* which so far as we know is the only segregate known in Scotland. (2) *R. maximus*, already referred to. (3) *R. platyphyllus* (*aquaticus* × *obtusifolius*), which should be found in Britain as a hybrid of *domesticus*. (4) *R. Ruhmeri* (*sanguineus* ×

conglomeratus. To me this is rather a hybrid of *condylodes* × *conglomeratus*. It seems undesirable to use the name *R. sanguineus* (which is such a rare and with us adventive species) for our abundant and widely distributed woodland species. (5) *R. Sagorskii* (*crispus* × *sanguineus*), to which the same criticism applies. (6) *R. Schulzei* (*crispus* × *conglomeratus*). (7) *R. Weberi* (*Hydrolapathum* × *obtusifolius*) which occurs with us. (8) *R. Schreberi* (*crispus* × *Hydrolapathum*), which should be looked for. It also may be hidden under our *maximus*. (9) *R. Wachteri*, nov. hybr. (*obtusifolius* × *odontocarpus*, Rotterdam, and *R. Wettsteinii* (*R. odontocarpus* × *obtusifolius*) found originally in Moravia. (10) *R. Neisslii* (*conglomeratus* × *stenophyllus*). (11) *R. acutus* (*crispus* × *obtusifolius*), common in Britain. (12) *R. balatonus* (*obtusifolius* × *Patientia*). (13) *R. Areschougii* (*crispus* × *paluster*). (14) *R. heteranthos* (*paluster* × *stenophyllus*), Rotterdam, Schiedam. (15) *R. stenophylloides* (*maritimus* × *stenophyllus*), Rotterdam, Schiedam. (16) *R. Wirtgeni* (*conglomeratus* × *paluster*). (17) *R. limosus* (*conglomeratus* × *maritimus*) which is British. The paper seems to indicate that *R. palustris* Sm. (which we make identical with *limosus*) is a distinct species, and in that case Marshall's view would be justified.

2195. RUMEX. Herr DANSER in the same publication has given some studies of the species of *Rumex*—*R. auriculatus*, *R. Acetosa hortensis*, (= *R. ambiguus*) and *R. hispanicus*. Under *R. Acetosa* he gives three colour forms:—(1) var. *rubida*, panicula rubro obscuro tincta, perigonii fructiferi, sepala exteriora toto obscure rubra vel margine lato rubro maculaque, centrali viridi parva; (2) var. *rubra*, panicula rubra, perigonii fructferi, sepala exteriora margine rubro maculaque centrali viridi; (3) var. *alba*, tota planta omnino vel fere omnino pigmento rubro destituta. There are sexual varieties as var. *feminea*, floribus femineis, and *mascula*, floribus masculinis, and plants with cross characters occur such as *R. Acetosa feminea rubra* and *mascula rubra*, etc. *R. Acetosella* has varieties based on leaf-cutting—(1) *multifida* L.; (2) *hastata* Neilr., foliis basi utrinque lacinia singula (rarissime nulla vel binis) ornatis; (3) *integrifolia* Wallr., or varieties derived from the breadth of the leaves—(1) *latifolia* Wallr.: (2) *angustifolia* Koch, or sexual variations—(1) *feminea*, and (2) *mascula*, or based on fruit-characters—(1) *gymnocarpa* Celakov., fructibus nitidis, pergonio liberatis, and (2) *angiocarpa* (Murb.), fructibus perigonio connatis, ergo superficie iniquis haud nitidis, or from the colour of the panicles—(1) *rubida*, panicula rubro obscure tincta; (2) *rubella*, panicula paulo rubri vel subviridi. These variations—they can scarcely claim to be true varieties—may of course have cross characters, that is var. *hastata latifolia feminea angiocarpa rubella* or *hastata angustifolia feminea gymnocarpa rubella*, etc. of which obviously an immense number may occur.

2195. R. Hydrolapatheum Huds. × obtusifolius L. = R. Weberi Fischer-Benz. in Prahl Krit. Fl. Prov. Schlesw.-Holst. ii., 186, 1889-90. In the greater part the *R. maximus* of British authors not of Schreber, and for the greater part the var. *latifolius* Borrer. Alfriston, E. Sussex; Lewes ditches, Chichester, W. Sussex; Upper Heyford, Oxon. The first two were named by Prof. Danser. *R. maximus* Schreb. is a hybrid of *R. aquaticus* and *Hydrolapatheum* and is not therefore likely to occur in southern England where *R. aquaticus* (even as a variety) is absent. G. C. Druce.

2209 (2). R. arifolius All. Fl. Ped. ii., 204, 1875, not of the younger L., nor of Aiton. The *arifolius* of L. fil. is *R. abyssinicus* Jacq. Hort. v., 48, 1776. Syn.:—[*Acetosa montana maxima*, Bauhin Pinax 114. *Acetosa montana, lato arifolio*, Boccone Mus. 165, t. 125. *Lapathum sexubis separatis, foliis sagittatis, hamis brevissimis recta divergentibis*, Haller Hist. ii., 204, n. 2040, 1768.] *Rumex Acetosa* L. Sp. Pl. 337, 1753, var. δ with references to Bauhin and to Scheuchzer Alp. 129 and var. ε with syn. from Boccone. *Acetosa alpina* Miller Gard. Dict., n. 5, 1768. *Rumex montanus* Desf. Tabl., ed. 2, 48, 1815. *R. hispanicus* Gmelin Fl. Bad. ii., 112, 1806, not of Koch. *R. Allionii* Link Handb. i., 306, 1829. *R. sylvaticus* Roth Handb. Tent. Fl. Germ. i., 129, 1788, not of Rafinesque. *R. alpestris* Scop., not of Jacquin. *R. dimorphus* Gren. in Gren. & Godr. Fl. Fr. iii., 43, 1856. *R. Acetosa*, var. *alpestris* Hartm. Handb. Sk. Fl. Exsicc.:—Reichb. n. 4235. Icon.:—Boccone Mus., t. 125. Reichenbach

Ic. Fl. Germ. et Helv. xxiv., t. 195. Distr. :—Lapland; Sweden; Norway (Dovrefeld, 3000 ft.); Germany (Brocken); Thuringia; Schwarz; E. Bohemia; Alpes (rare); Jura; Auvergne (Mt. Doré); Vosges; Sudetica; Austria; Hungary; Transylvania; Bosnia; Montenegro; Italy; Corsica; Sardinia; Greece; Siberia; Caucasus. Descr. :—Stem simple, erect, 5-10 dcm.; stem leaves thin and soft in texture, with 5-7 prominent nerves, shortly petiolate, oval-oblong, acuminate, more or less hastate-cordate with broad sinus the auricles short, the root-leaves few, 1-2, stalked, short, somewhat rounded at top, the upper leaves narrow, amplexicaul; ochrea membranous, sometimes disappearing before the flowering period short, terminated by a truncate projection; inflorescence paniculate, with simple alternate branches, bearing 3-6 flowered ebracteate verticels, the flowers on capillary pedicels; fruit-valves medium sized, suborbicular, truncate or cordate at the base, entire, longer than the nut, and having at the base a small reflexed scale; external divisions of perianth reflexed; nut dull, yellowish-green. This species is allied to *R. Acetosa* with which, as we have seen, Linnaeus merged it as a variety, but it is kept distinct by all modern botanists. Its main differences are in its larger and often broader leaves of a softer and thinner texture, with more prominent veins, and patent auricles, entire ochrea, somewhat smaller fruit-valves and dull yellowish-green nuts. In *Acetosa* the leaves are of a firm texture, with obscure veins, long converging auricles and narrow sinus, laciniate ochrea, larger fruit-valves and blackish-brown shining nuts. British Habitat :—on shady damp mountain-cliffs, not easy of access, at about 2900 feet high on Lochnagar, South Aberdeenshire. It is indubitably native and shows another and important link with the Scandinavian flora. I am indebted to Professor Danser of Amsterdam, the well-known authority on Rumices, for its identification. G. C. DRUCE.

2210. R. ACETOSELLA L. As we have already said Professor DANSER has treated the variations of this plant under five heads based on "secundum foliorum lacinias basales" on the width of leaves, on the sex, on the fruit and on the colour of the panicle. (1) MULTIFIDA L. seems to be adventive in Britain. I have it only from Rotherhithe, Kent, 1912, W.H.G. (2) HASTATA Neilr., which is represented as *latifolia* Wallr., Brandon, Warwick; Freshwater, Isle of Wight; Quenvais, Jersey, 1851, PIQUET; Ilmington, Warwick, 1847, E. C. TOWNSEND; Braid Hills, Edinburgh 1857, BELL; and *hastata latifolia*, Welwyn, Herts; Aldeburgh, Suffolk; Bute; and from other places as the combination *feminea angiocarpa*, Oxney Lode, Northants; Ilmington, Warwick; as *feminea gymnocarpa*, Frilford, Berks; Omagh, Ireland; Nash, Bucks; Freshwater, Isle of Wight; as *hastata angustifolia feminea angiocarpa*, Littlestone-on-Sea, Kent; St Helier's, Jersey; Llanderfel, Merioneth. (3) INTEGRIFOLIA Wallr., as *latifolia feminea angiocarpa*, Carbis Bay, Cornwall; Chewbrook Clough. Professor Danser has also named some of my herbarium specimens as *R. Acetosella* L., var. *denticulata latifolia feminea angiocarpa*, Crouch Hill, Oxon; Glen More, Easterness; var. *denticulata latifolia feminea*, Clifden, Galway; Connor Hill, Co. Kerry, 1906; var. *denticulata latifolia mascula*, Blackwater, Berks, 1895; Blisworth, Northants; Denbigh Hall, Bucks, 1873; Lerwick, Shetland.

2210. R. ACETOSELLA L., var. nova MCLEANII. Found by Prof. R. MCLEAN in 1923 who says it grows in grassland on Coal Measures between Taff's Well and Taipenstar, Glamorgan. It differs from the type in having very conspicuous, silvery, transparent (scarious) bracts, those between the flowers up to $\frac{1}{4}$ in. long. At the leaf-bases the silvery scales are as much as half an inch long. The leaves are auriculate, and the plants are about 4 in. high. I have nothing like it in my herbarium. G. C. DRUCE.

2210 (2). R. SCUTATUS L., var. HASTILIS Koch Syn. 615, 1837. Folia triangularia, acuta, dente baseos utrinque elongato hastata. Folia infima saepe ut in var. *hastifolius*. Merton College Walls, Oxford, 1883; Craigmillar Castle, Midlothian; Malham, Yorks; old walls at Settle, York; Bowness, Westmorland (as the glaucous form), G. C. DRUCE; Aberdour Castle. Fife, TEMPLEMAN. Named by Prof. Danser.

2210 (13). R. OBOVATUS Danser. Lapathum, Rumicis pulchri affinis. Planta omnis glabra est. Radix eius annua est vel biennis (forsan nonnunquam perennis). Caulis plerumque erectus est,

firmulus, sed subtenuis, a basi ramosus, altitudine 60 cm. vel humilior, parte superiore sicut rami, sulcatus, et in nodis saepe ultro citroque flexus. Rami, superiores patent, angulum 45 deg. cum caule faciunt, paniculamque apertam formant; rami inferiores magis patent, paniculamque terminalem minorem ferunt, nisi plantae circumstantes eorum evolutionem prohibeant; rami infimi, si bene evoluti, basi humi fusi sunt, parte superiori adscendunt; rami omnes ad apicem foliata sunt. Folia radicalia et caulina inferiora obovata sunt, apice obtusa et rotundata, truncata vel subcordata vel subcuneata; folia caulina media obovata vel oblonga sunt, apice subacuta, basi cuneata; folia caulina superiora paulatim angustiora apice basique acutiora fiunt; summa haud angusta sunt, elliptica vel oblonga; folia radicalia maxima longitudinem, 12 cm. non superant. Petioli foliorum radicalium lamina equilongi sunt, foliorum caulinorum gradatim breviores; folia summae paniculae sessilia sunt. Perigonii fructiferi maturi pedunculus crassus est, brevior quam valvae et articulationem incrassatam offert. Florum glomeruli inferiores remoti sunt, superiores conferti in racemos, omnes multiflori, statu maturo densi, subglobosi, foliati. Valvae anteriores ± 4½ mm. longae et ± 3 mm. latae sunt, ovatae apice obtusae vel subacutae, parte basali utrinque dentibus 4 vel 5 subulatis, usque ad 2 mm. longis, praeditae, parte apicali integrae nervis prominentibus elevate reticulatae. Perigonium fructiferum adultum granulis 3 magnis, ovatis, utrinque obtusis, iniquis primum spumaceis denique verruculosis ornatum est, quarum anterior paulo maior ± 2½ mm. longa. Fructus ± 2.8 mm. longus est.

R. obovatus differt a *Rumice pulchro*, cuius affinis est, praecipue ramis firmioribus brevioribusque, foliis inferioribus obovatis, florumque glomerulis densioribus, in caulium ramorumque apicibus confertis, omnibus foliatis.

R. obovatus was first noticed in Holland at Rotterdam in 1906, but was not then identified. Herr Danser gives an admirable figure with details. In Britain it was first gathered by me at Ware, Herts, in 1914 when I saw its alliance to, but its distinctness from, *R. pulcher*. Mr Horrell found it at Elland and Tingley, Yorks. before 1918. Mr N. Sandwith gathered it at Bristol, and Mr R. Grierson at Glasgow in 1920. Miss Cobbe also found it in quantity

at Hull in 1922. Dr A. Thellung was disposed to name these specimens *R. paraguayensis* Parodi (See *Rep. B.E.C.* 258, 1920, with Latin diagnosis) to which it is closely allied. Prof. Danser has kindly examined all the specimens recorded in the *Reports* as *obovatus* and passes them as correct. So, too, he does those of *R. cuneifolius* Campd. The specimen of *R. magellanicus* Griseb. (*Rep. B.E.C.* 574, 1919) he also refers to *R. cuneifolius*.

2245. ULMUS VEGETA Schneider (U. MONTANA × CARPINIFOLIA). Mr J. E. LITTLE in *Journ. Bot.* 201, 1923, says he has found a specimen of the Huntingdon Elm in the Sloane Herb. labelled "*Ulmus folio latissimo glabro* Buddle. The Broad-leaved smooth Wich-Elme," gathered at Danbury, Essex, in 1711. This precedes the supposed first raising of it at Huntingdon by Wood about 1746.

2247 (2). HUMULUS JAPONICUS Sieb. & Zucc. Alien, Japan. Cardiff Docks, Glamorgan, T. H. THOMAS. Det. Dr THELLUNG.

2258. ALNUS INCANA DC. (sic). Mr J. E. LITTLE in *Journ. Bot.* 146, 1923, gives an account of the Hitchin plant and a few additional localities to those mentioned in our *Reports*, *i.e.*, Arnside, Westmorland, found by Mr CUCKNEY, and distributed through the *Watson B.E.C.*; Roudsea Wood, Lake Lancashire; Doneraile, Co. Cork, ex A. B. JACKSON. Medikus is the earliest authority with which I am acquainted for the name.

2260. CORYLUS AVELLANA L. In *Bot. Not.* 280, 1923, J. HENRIKSSON describes 8 varieties of the species based mainly on the fruit and capsule characters. One is untenable, *i.e.*, *glandulosa*, since I gave the same name to a plant which has the young branches very glandular. The other vars. are *calcata*, *attenuata*, *extensa*. *complanata*, *sublecta*, and *annulata*.

2278 (2). SALIX ROSMARINIFOLIA. In the *List of the Plants found in the Country around Rugby* by Mr L. Cumming, the above willow is reported without date by Mr F. Thomas as "Found in two stations in Newbold (Warwickshire). The late Rev. W. R. Linton thought that it was not a native, being only an escape from gardens where it has been cultivated." From this it would appear to have come under Mr Linton's notice. There is no reference to it in the *Cambridge British Flora* nor in Bagnall's *Flora of Warwickshire*, and further investigation seems desirable.

2294. POPULUS CANADENSIS Moench and P. MONILIFERA Ait., by K. G. HARTWIG in Mitt. Eur. Dendrol. Ges. 170-2, 1922.

2320. ORCHIS PURPUREA Huds. Mr H. WALKER has sent from near Wye, Kent, some plants of this handsome species, which show enormous variation in the colour, shape, and size of the flowers. Some of the flowers are more than twice the size of the others. The side lobes of one remarkable specimen were ¾ in. long, the lobes being deeply cut into nearly linear segments. In others the labellum was small and but feebly notched. In colour they varied from nearly pure white to dull purple with very dark markings. As usual, Boswell Syme in *English Botany* gives an excellent description of the plant.

2325. O. TRAUNSTEINERI Saut., Monographie by A. FUCHS & H. ZEIGENSPECK in Bot. Arkiv. 238-261, 1923.

2326. O. INCARNATA L., The British Forms of, by Rev. T. STEPHENSON, D.D., and T. A. STEPHENSON, D.Sc. *Journ. Bot.* Reprint 273, 1923. A clear history of the species in Britain is given with a good general description. They rightly say that it grows in the wettest situations and often in damp sandy places near the sea. They mention a Gloucestershire specimen from Brimsfield Bog as 51 cm. high. The variation in the width of the leaves they quite correctly attribute to habitat conditions. In exposed situations the leaves tend to become broader, when growing in herbage they are much narrower. I once gathered a plant among *Phragmites* which was very tall with quite narrow, almost linear leaves. Messrs Stephenson think my var. *pulchella* of *O. incarnata* is distinct from the same named variety of *praetermissa*, and subsequent observation inclines me to keep them apart. This, or such a form, was thought by Babington to be *O. traunsteineri* Tausch which, as Messrs Stephenson say, has no right to a place in our List. They seem a little doubtful about the var. *ochroleuca* Wüstnei occurring in Britain. The pure white-flowered form is not rare but probably is not identical with the plant of Wüstnei. They rather question the varietal grade I have given to the dune plant, *i.e.*, var. *dunensis*, and in this they may be correct. One would not be surprised if it reverted in cultural treatment. At the same time it is such an extraordinarily beautiful and distinct looking plant on the Sands of Barry and elsewhere that it needs a name either as forma or variety. My experience also bears out the remarks they make about the comparative scarcity of the *incarnata* hybrids. This may be due to its flowering less frequently synchronising with that of its allies. They mention Col. Godfery's finding the hybrid with *Fuchsii* in Anglesey which they identify with × *O. ambigua* Kerner. An excellent plate and four text figures of the flowers (one being the var. *pulchella*) add additional value to this useful paper. I feel a little doubtful of figure D. being *latifolia*.

2326. O. PRATERMISSA Druce, by Rev. T. STEPHENSON, D.D., and T. A. STEPHENSON, D.Sc. *Journ. Bot. Reprint* 65, 1923. A carefully prepared paper by these authors, who give a photograph of two specimens from Norfolk. The authors contest the view held by the late R. A. Rolfe (*Orchid Review* 165, 1920) that *latifolia* is properly a species with unspotted leaves, an erroneous idea as I have already shewn (*Rep. B.E.C.* 608, 1919) and a view which could only be substantiated by unwarrantably changing the Linnean description in one of its most important characters. To cite such a name as "*O. latifolia* L., emend. Rolfe" when it is not an emendation, but the removal of one of the chief characters is to destroy the value of original diagnosis. A plant either agrees with the original description (and can then bear the assigned name), or it does not. In the latter case another name should be found for it. There is no justification for tampering with the original name. On the other hand, if the original description is incomplete it may be supplemented with additional but they must not be contradictory characters. Even then, there is no need to add " emend." The Stephensons, father and son, state that in their view *O. praetermissa* is a thoroughly well-marked and distinct species, whose segregation has helped materially to clear up the puzzling problems connected with the Marsh Orchids. They give an excellent description of the plant and its place of growth. The largest specimen they have seen was one sent by Mr Hunnybun from the Isle of Wight, which was 7 dcm. high with a flower spike 14.5 cm. by 4 cm. In the Chichester Canal and at Frilford, Berks, I have seen equally robust specimens, but this size is exceeded by the hybrid with *Fuchsii* which occurs in both those localities. They speak of the var. *pulchella* as a distinct and beautiful plant. Any botanist who may have seen it in full flower on the Caithness pastures or on the carboniferous limestone marshy ground near Bettyhill or Ledbeg in W. Sutherland or at the base of the Cnochan Rocks in West Ross will agree that it is an extremely beautiful plant. I may say that the Rev. G. H. Harris brought back from the Faroes, which he visited this year, a plant which must, I think, be referred to this variety. It may prove that *pulchella* is a micro-species or sub-species rather than a variety. Messrs Stephenson say it is closely related to their *O. purpurella*, which usually has spotted leaves. Mr T. A. Dymes finds that the seeds of the two plants exhibit marked differences—*purpurella* having the smallest and most dusky seed of the group, with the testal cells forming a close mesh. In *pulchella* they are much the same as those of the type, *praetermissa* having long, rather loose, testal cells. M. Sipkes (*De Levende Natuur*, 1921) has found both *praetermissa* and *purpurella* in Holland, and I have seen the former there and in Belgium. He has also described a var. *macrantha*, which has a long extension of the lip. This variety appears to be the same as the plant from Abingdon, Berks, grown at Scampston Hall by Mr W. H. St Quintin, and figured in vol. v, t. 1, *Rep. B.E.C.* 1917, in which I say that the middle lobe is longer than usual. This is an excellent paper, which is of real value to the study of the Marsh Orchids.

SEEDS OF THE MARSH ORCHIDS. Mr T. A. DYMES gave a paper on this subject at the Linnean Society Meeting of June 21, 1923. He first described the *maculata* group—(1) *O. Fuchsii* Druce. The apex of the testa is curved and pointed and the coils loose: (2) In true *maculata* (*ericetorum* = *praecox*) the kernel is about 30 per cent. larger than in *Fuchsii* or *O'Kellyi*, the coils loose and less developed than in *Fuchsii*: (3) *O. O'Kellyi* Druce has a long, almost straight, narrow seed with the coils close and pronounced; in the *latifolia* group (4) *O. praetermissa* has a long straight seed, not much dilated above the kernel, which is about the same breadth as the adjacent portion of the testa; (5) *O. incarnata* L., with much shorter and broader seeds than *praetermissa*, greatly dilated above the kernel, which is distinctly narrower than the adjacent portion of the testa, the mesh smaller than in *praetermissa*; (6) *O. purpurella* Steph. p. & f., seeds smaller than 4 and 5, testa dusky, indented on one or both sides above the kernel and tapering to a point, mesh small. With regard to *O. latifolia* L. Mr Dymes said that it is doubtful whether there is in this country anything so called that is not a hybrid or a mongrel derived from two or more of the six plants already dealt with. Adapted from *Linn. Proc.* 48, 1923.

2485. POTAMOGETONS OF THE BRITISH LAKES by W. H. PEARSALL & W. H. PEARSALL, D.Sc., in Journ. Bot. 1-7, 1923. In this paper are brought together the results of the laborious investigations of the Pondweeds in the English lakes, which for some years have occupied the attention of the Pearsalls—father and son. Exclusive of the *pusillus* group, in this paper eight species and two hybrids are dealt with. The authors consider that the leaf-variations in *perfoliatus*, *praelongus*, etc., are not true hereditary variations, but are due to light-intensity and soil constituents. There are no varieties of *P. perfoliatus*, but only growth forms. They also think that the fruiting capacity of a hybrid such as *P. angustifolius* depends upon a high light-intensity. The variation of Lakeland *P. alpinus* appears also to be due to varying light-intensity. Even with *P. polygonifolius*, var. *pseudofluitans* Syme the authors consider it to be a deep water state, and they agree with Fryer, who states that " the texture and shape of leaves are too inconstant to afford satisfactory ground for varietal distinction." There is, however, something to be said in favour of some notice being taken of these varying forms which, if unrecognised in our text-books, are a source of great trouble to the student. It is an excellent and valuable paper.

2508 (2). POTAMOGETON FOLIOSUS Raf. in Med. Repos., ser. 2. 5354, 1808, var. DIFFUSUS Arth. Bennett in Rep. B.E.C. 860, 1922. *P. pauciflorus* Pursh Fl. Am. Sept. ii., 121, 1814, and Ind. Kew. This American alien was discovered in the Exeter Canal, near the

Double Lock, Devon, by Mr W. S. M. D'URBAN in 1921. It has something of the look of *pusillus*. Just as another American plant, *Sagittaria heterophylla*, which is found in the Exe, has different characters from the American type which induced Mr Hiern to give it the varietal name, *iscana*, so, too, Mr Bennett considers the Devon form of *foliosus* to differ sufficiently from the type—itself a variable species—to be worth distinguishing as var. *diffusus*, characterised by the loose branching stems, longer internodes, longer peduncles and fruits developed in larger numbers on the peduncles. The question has been asked—how came these two American species in the Exe and its canal? Miss Ida M. Roper sends the following answer :—" I am told there need be no hesitation in putting the cause to the smart sailing vessels that have discharged salted fish in the heart of Exeter city for generations past from Newfoundland and Labrador. After the fish is landed there are always many cart loads of birch-wood and ling put on to the quay for removal as firewood, and the refuse is swept away. This wood is gathered each spring from off the moors of Newfoundland, and may well contain seeds of various water-loving plants, and the fresh water of the canal would favour germination." We also append the following note on the plant by its discoverer, Mr W. S. M. D'Urban :—" I went to the Exeter Canal on 18th August, 1921, to collect aquatic plants, and on my arrival at the Double Locks my attention was at once attracted by the narrow floating leaves of a *Potamogeton*. Although it was at some little distance from the canal bank I managed to get some specimens. I think it must have been a recent introduction to the canal, as I have not observed it there before, and it does not appear to have been noticed by any of the Exeter botanists who visit the canal. It, however, may have long existed in the Exe though it has only now been noticed in the canal, just as *Sagittaria heterophylla* has spread from the ' Haven ' Banks of the river into the canal. In October 1911 the lock gate at Double Locks, having been found to be much decayed (being, it is said, 90 years old), was being repaired. By some unfortunate oversight the lock gate at Turf, at the entrance of the canal some 4 or 5 miles off, was left open, and the tide flowed in as far as Double Locks. When the canal was subsequently emptied it was found that large numbers of fresh water fish (pike, roach and dace) and Anodontas had been killed, and I saw numbers of them lying dead at the bottom of the canal on 14th October. Many vessels put into Exmouth Docks and the Bight at Starcross on the western side of the river from various places. That seeds can be floated up the river by the tide is shown by the fact that seeds of Samphire (*Crithmum maritimum*) were deposited in crevices in the river wall here 5 miles from the sea by an unusually high tide and sprung up, the plants remaining for several years until destroyed by passers-by. There has been but little traffic on the canal since 1914. An occasional onion boat from Brittany and I think a schooner with salt cod from Newfoundland are all I can remember having seen going up the canal to Exeter. Formerly there was a large trade with Newfoundland, and many cargoes of salt fish arrived annually. The interiors of the holds of the vessels were lined with slabs of bark stripped off large trees, probably Hemlock Spruce. If this *Potomogeton* is found in Newfoundland it seems possible that its seeds may have been brought to Exeter adhering to the bark which perhaps had lain in fresh water in some river or lake before being brought to the coast for the use of the shipping."

2535. SCIRPUS TABERNAEMONTANI × TRIQUETER = S. ARUNENSIS mihi. River Arun, above Chichester, W. Sussex. The size, the glaucous colouring and its growing in the absence of *S. lacustris* point to *S. Tabernaemontani* Gmel. as one of the parents. G. C. DRUCE.

2542. S. SETACEUS L., var. vel forma nova PEDICELLATA. In *Rep. B.E.C.* 153, 1920, I drew attention to a form of this species which Lady Davy and I found near Woking, Surrey, in which some of the spikes were borne on short stalks. Dr Ostenfeld thought this might be from some of the lower flowers having dropped, but Mr Trapnell has this year sent me from Walton Moss, N. Somerset, a large plant about 11 in. high in which several of the young spikes are stalked. Others on the plant are sessile. I can find no such form mentioned. G. C. DRUCE.

2627 (2). CAREX MICROGLOCHIN Wahlenberg in Vet. Akad. Handl. Stockh. 140, 1803. Spica floribus fem. 4-10, masc. subquinis; fructibus reflexis, lanceolatis, arista ex ore integro exserta filiformi recta subulatis, semiteretibus, tenuissime striatulis. Syn.:—*Carex aristata* Clairv. Man. 209, 1811; *Uncinia microglochin* Spreng. Syst. iii., 830; *U. europaea* Gay in Flora 26, 1827. Exsicc.: Ahlberg, Kongsvold, 3000 ft., 1870, Fries Herb. Norm. iii., 85; Zetterstedt, 1870, Fl. Scand.; Unio Itin., 1828; Jamtland, Suec., Sept. 1872; Windisch-Garsten, Austr. sup., 1864, Schultz Herb. Norm.; Switzerland, 1826, Schleicher; Altai, 1827, Gebler; Bernina, Helv., 1886, Druce; Dovrefeld, Norge, 1922, Druce. Ic.: Flora Danica, t. 1402; Lindm. Svensk Fanerogam 119, f.5; Blytt Norge Fl.; Coste Fl. de Fr. iii., 493, t. 3804. Distr.: Greenland; Lapland; North Sweden; N. & S. Norway; Iceland; Savoy; Piedmont; Lombardy; South Tyrol; Bavaria; Swabia; Lithuania; Altai; Caucasus; Thibet; Himalaya; and now Scotland. The nearest ally to *C. microglochin*, and the only one for which it might be mistaken, is *C. pauciflora*. It may readily be distinguished from that by its more numerous female flowers, 4-10, as against 2-4. They are also aggregated in a denser spike, and the fruits are of a darker colour. These have a basilar setiform appendage (bristle) longer than the utricle. This is absent in *pauciflora*. The utricle is fusiform-subulate, compressed, attenuated at the base and is longly narrowed into a short beak. The British plants exactly resemble the plants I gathered on the Dovrefeld last year, and vary from 4 to 10 cm. in height. Some mid-European specimens are much taller, and reach to 20 cm. The rootstock is stoloniferous, but forms denser tufts than *pauciflora;* the leaves are chiefly basilar, are shorter than the stem, and are smooth and setaceous; the spikelet is solitary, terminal, short, and androgynous, the males about 6 at the top, the females, 4-10, below; the glumes are dull, reddish-brown, oblong (in *pauciflora* they are pale and lanceolate), the style short, included, with three stigmas; the utricles are reflexed when ripe about 6 mm. long, finely nerved, attenuated, and longer than the glume, and, as has been said, are furnished with a bristle at the anterior base which is longer than the utricle; the achene is oblong trigonous. Habitat: In rather bare, marshy places, with *Kobresia*, *Juncus triglumis* and *Carex atrofusca*, at about 2500 feet on Meall Garbh in Coire nam Buidheag (the Yellow Corrie). Discovered by Lady Davy, in company with Miss Gertrude Bacon, July 25, 1923. After 80 years the members of the Society once again made some combined outdoor investigations. One party visited Jersey in June, and on that occasion Miss Vachell and Mr T. Attenborough added *Orchis militaris* to the Jersey flora. Other plants gathered are still under investigation. In July Mr Williamson and the Secretary visited Caenlochan, Golspie, Thurso, Bettyhill, Alltnaharra, Durness, Inchadamph, Grantown, Braemar, etc., and another party, under the leadership of Mr Foggitt, visited Forfarshire, Ben Vrackie, Sow of Atholl, Ben Lawers, Craig Cailleach, Meall Garbh, Sky, Ben Nevis, Glen Spean, etc. On the visit to Meall Garbh Lady Davy and Miss Bacon were behind the rest of the party, and in two separate boggy places each noticed a sedge resembling *pauciflora* and collected specimens. On her return to Surrey Lady Davy consulted Coste's *Flore de France* and Blytt's *Norge Flora*, and became convinced that the sedge was not *pauciflora* but *microglochin*. She sent me specimens for confirmation. A glance was sufficient to enable me to send a wire of congratulation on this important addition (which I had long sought for) to the British flora. It is especially satisfactory since Lady Davy and Miss Bacon have done a vast amount of work not only for the Wild Flower Society, for which they have been untiring referees, but for botany in general.

Lady Davy's discovery of *Carex microglochin* is so important an addition to the British flora that it was considered desirable to visit the locality to see under what conditions the plant grew. Therefore I went north to Perth, where Mr R. H. Corstorphine kindly met me and motored me to Kenmore. Two days were occupied in visiting various places in Glen Lyon. Then a third expedition was made, in company with Mr D. Haggart, Major, Mrs, and Mr Launcelot Fleming, Mrs Douie Urquhart, the Rev. W. M. Gillies, Mr R. H. Corstorphine, and Mr T. Churchill, to the Yellow Corrie in Glen Lyon, where, after a stiff walk of about five and a half miles, we found the sedge at 2500 feet altitude. In grows on the grassy mountain slopes in places where the runnels open out in flattish spaces, forming micaceous shallow bogs where the vegetation is sparse and small. It avoids the more sloping and grassy places over which the water trickles, and in which *Carex capillaris* and *C. saxatilis* delight to grow. The latter sedge occurs in a small and scattered form, but it also does grow with *microglochin*, which has as its associates *Carex dioica*, *C. atrofusca*, a small form of *C. flava*, *C. Goodenowii*, *Juncus triglumis*, and rarely *Kobresia*. In such habitats *Carex microglochin* was tracked up to an altitude of 3000 feet. A few specimens were found as tall as five inches, but usually they are from three to four inches only. On the slopes between these micaceous bog-terraces grow *Silene acaulis*, *Saxifraga oppositifolia*, *Juncus biglumis*, *Juncoides spicatum*, *Sagina saginoides*, and other alpines now mostly over flower. The higher rocks show *Salix herbacea* and *reticulata*, *Cerastium alpinum*, *Pseudathyrium alpestre*, *Polystichum Lonchitis*, but the *Hieracia* were over flower or non-existent. This season has been exceptionally poor in these species; indeed to most mountain vegetation the mild spring, then the heavy fall of snow in May, followed by dry weather, caused the alpine species to be very sparse and poor. On August 25th the *Carex microglochin* was over-ripe, and the fruits began to drop when gathered, so that they are not good examples for the herbarium. It is evident that *microglochin* does not like running water, but prefers a shallow micaceous bog with no great amount of competing vegetation; in fact, the conditions in which it grows in the Dovrefeld are repeated in Scotland. In Norway it is associated with *Eriophorum Scheuchzeri* and *Carex capitata*—plants at present unknown in Britain. The discovery of *microglochin* raises hopes that these and *Konigia*, *Juncus arcticus*, *Carex cespitosa*, and *Epilobium lactiflorum* may yet be found in Britain. One may add that in the Yellow Corrie *Carex pauciflora* was found plentifully at 1500 feet with *C. binervis*. G. C. DRUCE.

2643. SPARTINA TOWNSENDII Groves. A paper on the occurrence of this grass in France by Messrs CORBIERE & CHEVALLIER is printed in the Bull. Soc. Linnéenne de la Seine Maritime iii., 1923. They say that having compared it with specimens in L'Herbier du Museum de Paris they find it " offre notamment une extrême resemblance avec les spécimens de l' Herb. Jussieu étiquetés *S. glabra* Amer. Sept. (Torrey) 1834 et ceux de l'Herbier V. Jacquemont, Long Island (Cooper 1824). On observe la même robustesse de la plante, les mêmes feuilles, les mêmes épis et en aussi grande nombre (3 à 12) les épillets ont même forme et mêmes dimensions mais ils sont glabres dans la plante de Torrey et de Cooper. Toutefois, dans sa Monographie des Spartina d'Amérique. E. D. Merrill (U.S. Dept. Agric. Bull. No. 9, 1902) descrit *S. glabra* Muhl., var. *pilosa* Merrill à qui il a donné comme synonyme *S. stricta* auct. Amer., non Roth = *S. stricta maritima* Scribn., qui a les épillets velus et dont la déscription correspond de tous points avec celle de *Townsendii.* Cette variété vit sur la côte Atlantique, de la Pensylvanie à la Floride. En comparant à ces mêmes plantes le *S. Neyrauti* Fouc. du golfe de Gascogne, on constate qu'il est tout à fait conséquent à la plante d'Amerique. En résumé, *S. Townsendii* et *S. Neyrauti* designent une même plante. Ce n'est nullement un hybride né sur les côtes d'Europe, mais c'est une plante importée de la côte Atlantique de l'Amérique du Nord, le *S. glabra* Muhl., var. *pilosa* Merrill = *S. alterniflora* Lois., var. *pilosa* Merrill. Hitchcock (*Gen. of Grasses of the United States*, Bull. 772, 1920, U.S.A. Dept. of Agric.). Son appellation d'après les règles de la nomenclature doit être désormais *S. glabra* Muhl., var. *Townsendii* (Groves) Corb. et Chev. More recently (p. 308) M. Pierre Senay records it as occurring at the Pointe du Hoc. nar Le Havre.

2653. PHALARIS MINOR Retz., forma CYLINDRICA Weber et Thell. in Nederl. Kruidk. Archief. 129, 1916, and 131, 1917, et Latin descr. in Viert. Nat. Ges. Zurich 64, 700, 1919. Southampton, J. RAYNER. Det. Dr THELLUNG.

2657. ANTHOXANTHUM ODORATUM L., forma vel var. RAMOSUM mihi. Mr W. WILSON has sent me from the neighbourhood of Lumsden, N. Aberdeenshire, a specimen of the Vernal Grass in which the inflorescence is compound, consisting of five spikes, each about an inch long. G. C. DRUCE.

2662. ALOPECURUS PRATENSIS L. A specimen gathered by R. GRIERSON on the Glasgow Tips in 1922, Dr THELLUNG says recedes towards the sub-sp. *ventricosus* (Pers.) Thell.

2684. AGROSTIS ALBA L., forma nova SUBBIFLORA Kloos. in Nederl. Kruidk. Archief., 1921. Haec forma differt ab Agrostide alba normali spiculis nonnullis bifloris inter unifloras intermixtis.

2751. DACTYLIS GLOMERATA × ASCHERSONIANA. O. HOLMBERG in *Bot. Not.* 327, 1923.

2769. POA ANNUA L. Mr F. BAKER (*Gard. Chron.* ii., 149, 1923) asks if it is a perennial, and states that as the result of his observations he finds that in Lancashire it is a perennial, and forms a good grass for bowling-greens in many of which it forms a considerable proportion of the turf. Prof. Hackel some years ago named a plant which I collected in Caithness, var. *perennans.* Mr George Nicholson, some long time ago, in the *Gardeners' Chronicle* stated that the grass-plots near Westminster Abbey were almost entirely composed of this species. There perhaps it is in the typical annual condition.

2828 (2). AGROPÝRUM CAMPESTRE Gren. & Godr. Fl. Fr. iii., 607. *A. glaucum* Reichb. Exc. i., 20, non Desf. Epi raide, allongé, lâche, distique, simple ou quelquefois rameux; rachis très rude, non cassant. Épillets un peu écartés les uns des autres surtout les inférieurs, dressés et appliqués contre l'axe, oblongs, comprimés, compactes et renfermant de 5 à 9 fleurs. Glumes presque de moitié longues que l'épillet, peu inégales, linéaires-oblongues, subaiguës, mucronées ou brièvement aristées, étroitement scarieuses aux bords, fortement carénées à 5-7 nervures saillantes qui atteignent le sommet. Glumelle inférieure obtuse brièvement et obtusement mucronée; glumelle supérieure ciliée. Feuilles allongées, glauques et très rudes en dessus, fermés, étalées, distiques, planes, longuement atténuées au sommet, munies à la face supérieure de nervures saillantes rapprochées, qui ne laissent pas voir le parenchyme et sont armées d'un rang de petites pointes aiguës. Chaumes dressés raides entremêlés de tige non florifères, moins étroitement fasciculés que dans *pycnanthum.* Souche longuement rampante. Plante de 6-12 décim. Gren. & Godr., *l.c.* This has small spikelets, glumes not awned and not conspicuously acute, the spikelets arranged as in *pungens*, flattened and distichous. It is a less robust plant than *pungens*; the leaves are glaucous, nearly flat and as are the sheaths and glumes, glabrous. The plant is more tufted than *intermedium* Host, the glumes, not so obtuse, are mucronate and only narrowly scarious. Chichester Harbour, West Sussex, July, 1917. Abbé Coste retains it as a distinct species. It forms a passage from *pungens* to maritime forms of *repens* though nearest to *pungens.* G. C. DRUCE.

2380. A. REPENS Beauv. Quack Grass. United States Dept. of Agriculture, Farmers' Bulletin, n. 1307, 1923. Gives the distribution and history of this agricultural pest. It has been found in every State north of Florida and Arizona and extends northwards to the limits of cultivation being common near Sitka in Alaska. It seldom thrives above 2000 feet altitude. It appears to have been first recognised in America by the Rev. Jared Eliot of Connecticut, a friend of Benjamin Franklin, in 1751 and in 1813 Muhlenberg detected it in New Jersey and New England. It entered Iowa and Wisconsin in 1875 and Minnesota in 1890. At the present time the scene of the most active spread is in the prairie provinces of Western Canada. It is found as a weed in Argentina and Australia. Dodoen in 1572 says " it is a naughty and hurtful weed to corne " and we may add that its earliest notice in English botanical literature is in Gerard of 1597 who says it grows " in gardens and arable grounds as an infirmitie and plague." An illustration is given of the inflorescence which shows more than one variation. Other illustrations given are of its subterranean growth and the two long curved horns at the case of the young leaf. Not only is it very destructible to small grain crops and market gardens but it acts as a carrier of *Puccinia graminis*. As one might expect from its vigorous root-development it is a poor seeder, and even the seeds are feeble germinators—from 30 to 50 per cent. only. Its best method of eradication is by shallow ploughing (3 inches, or in meadow land 3-6 in. deep) as the rhizomes can then be easily harrowed out. Deep ploughing covers them with soil and helps to spread them. Buckwheat as a cover-crop is also recommended. A fine plate of such a crop is given. Even tar-paper. as a cover, has been used, but mineral poisons and low grade oils are too expensive. Hog pasturing has been found effectual as the hogs are fond of the underground stems which are nutritious. Indeed they are useful when made into a decoction as a demulcent drink. About 250,000 pounds were annually used in the U.S., most of which came from Germany. The leaves have been used as a coarse hay which is easily harvested: indeed it forms a noticeable percentage in the hay which reaches the Boston market. As a pasture grass it quickly becomes sod-bound and dies out. It can also be used in silage. During the war the seeds were ground into a coarse flour and were used freely in southern Bavaria where it was considered superior to other wheat substitutes. Coffee-substitute was also made from the roasted rootstock. This Bulletin shows the excellent help given to the farmer by this most energetic Department.

2830. A. REPENS Beauv., var. nova LEPTUROIDES Murr. Planta humilis, inflorescentia rigida, compacta, folium summum haud multum superans, J. Murr. This we gathered at Kirby-le Soken in N. Essex on June 17, 1917. The whole plant is under nine inches high. G. C. DRUCE.

2832. A. VIOLACEUM (Hornem.) C. Richt. Pl. Eur. i., 123, 1890. See *Rep. B.E.C.* 864, 1923. I intended to send a note on this to the Distributor's *Report* last year but had not time. Lindman (*Svensk Fanerogamflora* 106) cites, with queries, as synonyms *Triticum violaceum* Hornem., *Agropyron Donianum* F.B.W. and *Triticum biflorum* Brignoli. The plant grows in turf, not in cultivated ground, on the Dovrefeld.

2866. EQUISETUM MAXIMUM Lam., Anomalous Traces in the Cone of. Lady ISABEL M. P. BROWNE in Annals of Botany 595, 1923.

2876. PTERIDIUM AQUILINUM Kuhn. In *Journ. Bot.* 7, 1923, W. R. MAXTON treats of the type-species of *Pteris* which is shown to be *Pteris longifolia*. Of the 19 species of *Pteris* in the *Sp. Pl.* eight belong to the section containing *longifolia*. This view is also adopted by Christensen. Our British Bracken comes under *Pteridium* which was established by Scopoli in 1760. Schinz and Keller (*Flora der Schweiz* 11, 1923), however, choose Newman's *Eupteris*, which, of course, is much later than the *Pteridium* of Scopoli.

2879. PHYLLITIS SCOLOPENDRIUM Newm. Under the name *Scolopendrium vulgare* Professor W. H. Lang, F.R.S. (*Journ. of Genetics* 167, 1923) has a paper on the genetic analysis of a heterozygotic plant which was supposed to have come from Skibbereen, Co. Cork. Spores were sown, and the plants behaved like a hybrid of the F 2 generation. One half of the frond of an individual was entire, the other incised. The progeny, when the spores were sown together, showed segregation of the entire-leaved and incised-leaved characters. There were about 75 per cent. of the former and 25 per cent. of the incised. The incised-leaved plants bred true, behaving like extracted recessives. The two entire-leaved plants of the F 2 generation that have been bred from have segregated in the same way as the original plant. They behave as impure dominants, the entire-leaved character being completely dominant to the incised-leaved.

2893. POLYSTICHUM ACULEATUM Roth, var. GRACILLIMUM Cranfield. At a meeting at the Horticultural Club held on Feb. 27, 1923, at the Hotel Belgravia, Mr W. B. CRANFIELD, the President of the Pteridological Society, delivered a lecture reported in the *Gardeners' Chronicle*, 137, on Hardy British Ferns. He said that in Lowe's *Handbook* of 1908 over 1700 varieties are described, of which more than 1300 were wild finds, many of them quite unworthy of record. Since that date many more have been found. The lecture was copiously illustrated with lantern slides of the various varieties. The one figured in the *Gardeners' Chronicle* is the above, which has a singularly graceful habit. Mr Cranfield states that the spore-production in ferns is on an immense scale. It is calculated that a single vigorous plant of the Lady Fern may produce annually 1,120,000,000 spores, every one of which is capable of producing an individual plant.

NOTES ON PUBLICATIONS, NEW BOOKS, ETC., 1923.

(*Owing to exigencies of space and the erratic receipt of foreign works this is necessarily incomplete.*)

ALMQUIST, ERNST. Alexis Jordan und die Kleinarten, in Svensk Bot. Tidskrift 521, 1923. Studien über Capsella Bursa-pastoris, ii., in Acta Hort. Berg. 40-95, tt. 16, 1923.

ASCHERSON & GRAEBNER. Syn. der Mittel-Europ. Flora. Lfg. 107, 1923. Caryophyllaceae, Nymphaeaceae, Ceratophyllaceae, Ranunculaceae.

BATTANDIER, J. A. Essai sur les Raretés de la Flore Algérienne, in Bull. Soc. d'Hist. Afr. du Nord 280-4, 1922.

BAYER, Dr AUG. On Protecting Nature in Slovakia, in Vestnik 108, 1923.

BOODLE, L. A. The Bacterial Nodules of the Rubiaceae, in Kew Bulletin 346, 1923.

BOSE, Sir JAGADIS CHUNDER, F.R.S. THE PHYSIOLOGY OF THE ASCENT OF SAP. pp. 277. Longmans, Green & Co., 1923; 16/-. The question how the water absorbed by the root is raised to the top of a tall tree has exercised the ingenuity of physiologists for centuries, and has received a variety of answers. These answers may be classified as either physical or physiological. The former attribute the phenomenon to the action of physical forces, evaporation, etc.; the latter regard these forces as inadequate, and urge that the energy of the plant itself must play an important or even the chief part. The physiological or "vitalistic" view has been in abeyance since Strasburger's work on the subject in 1893, whilst the physical view has been strengthened by the ingenious researches of Professor Dixon. Sir J. C. Bose now comes forward to reassert, with greater definiteness than ever before, the truth of the physiological view, and adduces in this book a mass of experimental evidence in support of his contention. The nature of his evidence is briefly this:—(1) it is well known that the movements of plants, growth, sleep-movements, etc., are affected in definite ways by changes in the external conditions—temperature, light, and moisture, and by mechanical or chemical stimulation; (2) experiment shows that the ascent of sap is affected by the changes and stimulations in precisely the same manner as are the movements. The inference to be drawn is obviously that, inasmuch as it is accepted that the movements of plants and induced changes of movement are the expression of the contractility and irritability of the living protoplasm, *i.e.*, that they are "vital" phenomena, it necessarily follows that the ascent of sap is likewise a function of living protoplasm, *i.e.*, it is a "vital" and not a "physical" process. The experimental evidence consists of a wealth of observations, substantiated by a large number of automatic records obtained by newly devised, highly sensitive and accurate apparatus which is fully described and illustrated in the book. It points to the existence throughout the plant of certain pulsating cells which, by their alternate contraction and expansion, pump the sap upwards from the root to the topmost leaf. The actual position of the pulsating tissue was ascertained in several cases by means of a specially ingenious instrument, the electric probe, and it was found to be a ring of cells enveloping the stele in the stem of Dicotyledons, and the individual vascular bundles in that of Monocotyledons. Investigation was not, however, limited strictly to the ascent of sap; it included also the allied phenomena of transpiration and exudation (bleeding). On the same general method, but with appropriately devised apparatus, observations were made demonstrating that these are both vital functions. The question of the share of evaporation in the transpiratory process is finally determined. The primary act is the excretion of water by the living transpiring cell: evaporation merely removes the excreted water. Transpiration and exudation are shown to be closely connected; they are two modes of the excretion of liquid by the plant. Particularly interesting are the accounts of experiments relative to the effect of light of various intensity and wave-length on these processes. It will be recognised, even from this inadequate summary, that Sir J. C. Bose's book is the most important contribution of recent times to the elucidation of the problem of the distribution of water in plants. S. H. VINES.

BOSE, Sir JAGADIS CHUNDER, F.R.S. LIFE MOVEMENTS IN PLANTS. pp. xx., 599-992, tt. 107. Longmans, Green & Co., 1923. This is composed of vols. iii. and iv. of the Transactions of the Bose Institute. The present two volumes contain an account of Sir Jagadis' " investigations on geotropism, on dia-heliotropic attitude of leaves as regulated by transmitted nervous impulse, on assimilatory and dissimilatory changes under light, on new methods of recording the effects of protoplasmic changes under stimulus, and also of various methods and appliances for detection of the two fundamental reactions to which all plant movements are due." As Sir Jagadis says in his preface, " with regard to the geotropism of higher plants, electric investigations have been described which lend support to the theory of statoliths, indeed practically confirm it. Investigations by means of the electric probe have made it possible to explore the interior of the plant, and map out the excitatory changes from layer to layer under the stimulus of gravity." The work gives an explanation of the wonderful series of experiments the author has devised. To those who have seen him perform these very delicate investigations he seems to have justified his contentions; indeed his claim "that it is possible to unravel the complexity, and discover a generalisation for the life-movements in plants" seems fully warranted. The results of these experiments show how closely related is the whole of animate nature, and that vegetable tissue seems to be as responsive to poisons, irritants or punctures as that of animals.

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BOTANY, JOURNAL OF, 1923. Edited by J. Britten. Price, 22/6. Among other papers, some of which are mentioned under the species, there are three by Mr H. N. Dixon on Dr Stirton's New British Mosses Revised, p. 10, 46, 69. Notes on Carnarvonshire Plants, by H. W. Pugsley, p. 19. Distribution of *Euphrasia* in Cornwall, by F. Rilstone, p. 54. Spitsbergen Lichens. This refers to specimens gathered on the Oxford University Expedition in 1921 by R. Paulson, p. 77. *Statice vestita*, a Dalmatian plant, with a plate by C. E. Salmon, p. 97. Cryptogams from the Antarctic, by O. V. Darbishire, p. 105. *Dryadodaphne*, a new Genus of the Lauraceae, from New Guinea, by S. Le M. Moore, p. 109. George

Clifford's Herbarium and the Hortus Cliffortianus, by A. B. Rendle, p. 114. *Thymus lanuginosus* in Herb. Miller, by A. J. Wilmott, p. 136. Ehrhart and the Supplementum Plantarum, by J. Britten, p. 148. Variable Aestivation of *Ranunculus bulbosus* and *R. acer* by L. A. M. Riley, p. 209. A New *Veronica* from Bulgaria. This is named after our member, Mr W. B. Turrill, *V. Turrilliana*. It belongs to the *Chamaedrys* section, and occurs at Malko Tirnova in south-eastern Bulgaria, by Prof. N. Stojanoff and B. Stefanoff, p. 219. *Lloydia serotina* by J. Britten, p. 225. *Echium polycaulon*, by C. C. Lacaita, p. 259. The Saline Flora of Staffordshire, by Rev. H. P. Reader, p. 278. Notes on some Oriental Onosmas, by C. C. Lacaita, p. 280. New Guinea Plants, by H. O. Forbes. Supplement.

BOWER, Prof. F. O. THE FERNS (FILICALES). Analytical Examination of the Criteria of Comparison. An enquiry into the method of comparative study of the class of Filicales, due attention being given to the Fossils which illuminate their history. Vol. 1, pp. x., 259, and 307 figures. Cambridge University Press, 1923; 30/-. The clarity of style which greets him in the preface puts the reader at once into full sympathy with the important work. Taking as his text a sentence of Stevenson's, he tells us that to travel hopefully is the chosen pursuit of all who study large groups of organisms with a view to reducing them to order, so as to throw light on their origin and evolution. In such quests, he warns us, " no one need expect under present conditions to arrive at the final destination of complete and assured knowledge. If any one should indulge this hope his disappointment is certain. . . . It is in the pursuit of evolutionary history, not in the arrival there, that the true blessedness of the morphologist lies." To take part in such a quest the student can have no better guide than this beautifully prepared and copiously illustrated volume, which reflects great credit upon its author and upon the Cambridge Press, which has produced it in so good a guise. We are also very glad to see that the author has adopted the nomenclature of Fern names used by Christensen in his *Index Filices*, so that the Hartstongue is *Phyllitis Scolopendrium*, the Male Fern, *Dryopteris Filix-mas*, the Jersey Fern, *Anogramme leptophylla*, and the Bracken, *Pteridium* *aquilinum*. In connection with this comes a minor criticism. The reader should have seen that only one name is used for a genus. In the case of the Male fern and its allies, actually four names are employed. On p. 2 it stands rightly as *Dryopteris* (*Nephrodium*); on p. 326 it is *Lastraea* (more correctly *Lastrea*); on p. 323, etc., it is *Nephrodium*, and in the Index, p. 351, by a slip, it is *Drynaria*. Probably no other botanist could have presented such a philosophical study of Fern history as Prof. Bower. It is indispensable to any laboratory worker or teacher on a subject which lies outside the range of most field-botanists' investigations. Yet the able manner in which most difficult points are explained and demonstrated suggests the desirability for all those who can spare the expense to have it on the shelves of their library. The concluding volume, we trust, will soon be produced, laborious though its production must be, yet " the true success is to labour."

BOTANISKA NOTISER, 1923. As usual, this publication contains many papers of interest. Einige neue Alchemilla arten von Mt. Elgon, E. Africa, by Th. C. E. Fries. Sp. nonnullae novae Marocco by S. Murbeck. Svenne Polygon arter by G. SAUNNERSON.

BRAUN-BLANQUET, J. et MAIRE, R. Contributions à l'Etude de la Flore Maroccaine. Bull. Soc. d'Hist. Afrique du Nord 13-22, 180-195, 1922; 73-77, 1923.

BRITISH BRYOLOGICAL SOCIETY. Report for 1923. President, Mr H. N. Dixon; Gen. Secretary, Mr D. A. Jones, M.Sc.; Secretary, Miss E. Armitage; Treasurers, Mr J. A. Wheldon, M.Sc., and Rev. R. Jackett. An excellent Report of 40 pages, with obituary notices of W. H. Pearson and William Ingham.

BRITTON, N. LORD, & ROSE, J. N. THE CACTACEAE. Descriptions and Illustrations of Plants of the Cactus Family. Vol. iii., pp. 255, tt. 24. Washington, Carnegie Institute, 1922.

BULLETIN SOC. BOT. DE FRANCE, 1923. *Spartina* in the French Flora, p. 54.

CHASE, AGNES. FIRST BOOK OF GRASSES. The Structure of Grasses explained for Beginners. Rural Text-Book Series. Ed.,

L. H. Bailey. pp. 121. The Macmillan Co., New York, 1922; 6/-. Miss Chase is an acknowledged expert on the grasses, and one feels confidence in her not only thoroughly knowing the subject, but how to teach it to others. Hence although the examples selected by her are grasses of the United States, yet any British botanist who wishes to understand what they are accustomed to think a difficult group will do well to study this excellent text-book, for by its aid half the British genera will be made intelligible, and the remainder will easily fall into their proper places. As she says, this primer is really an elementary study of the morphology of the spikelet. She illustrates the distaste which beginners have for technical terms by saying no boy learns a trade, no girl learns to sew, without learning the names of the tools used. It is easier to say glume than the little green scale on the outside of the thing with the seed in it. The tools needed for the examination of grasses are few—a lens, magnifying about 10 diametres, and one or two dissecting needles. The nail of the left forefinger is most useful in dissecting. A scalpel is useful, but the small sharp blade of a penknife will answer instead. Black paper or cardboard is recommended to be used on which to place the spikelets, as the hairs on the different parts show up well on this background. A typical flower has (1) first glume, (2) second glume, (3) lemma, (4) palea. (The genus *Poa* is characterised by its 5-nerved keeled lemma). In this latter point the grass differs from a sedge as the latter never has a palea. Glumes and lemmas are, morphologically, reduced leaves: the lower pair not flower-bearing, are glumes, the flower-bearing ones are lemmas. A spikelet consists of glumes and florets in two ranks and alternate on the rachilla, the florets consisting of lemma, palea and enclosed flower. The teaching in this elementary portion is concise and clear, and the diagrammatic summary of the primary characters of the tribes excellent. An outline study of a grass plant is given, suggesting points to be observed. An example is also selected by which a grass may be run down by a Key, but it is most wisely added, "the name reached in the key is verified or rejected by reading the description in the text and noting how the characters of the plant agree with those specified. When the description does not apply to the plant in hand, one must return to the key and try again."

CHIPP, T. F. Notes on Upper Guinea Flacourtiaceae, in Kew Bulletin 265, 1923. New Species of *Rinorea* from West Africa, *l.c.* 289, 1923.

CLEMENTS, FREDERICK E. The Ecological Method in Teaching Botany, in New Phytologist 98, 1923. Contents, Methods and Measurements in the Teaching of Elementary Botany, *l.c.* 191, 1923.

COATES, H. A PERTHSHIRE NATURALIST: CHARLES MACKINTOSH OF INVER. pp. xx., 244, tt. 32. T. Fisher Unwin, 1923; 18/-. Charles Mackintosh was born in 1839. He was the son of a weaver at Inver, near Dunkeld. Like Robert Dick and George Don, he had the love of nature, and during his long round of about 16 miles as a village postman on a weekly wage of 16/- he found time to collect and study not only the flowering plants and ferns, but the cryptogams, especially the Basidiomycetes of his area. He added four species new to science, and thirteen new to Britain. Dr Buchanan White introduced me to him in the eighties, and I found him keen and intelligent. He died last year.

COCKAYNE, Dr L. FLORA OF NEW ZEALAND IN DIE VEGETATION DER ERDE. Edited by Prof. A. Engler and Prof. O. Drude. Vol. xiv., pp. xxiii., 364, 2 maps, tt. 65. G. E. Stechert & Co., New York. This is well executed, both from a floristic and from the ecological side. The alpine flora of these beautiful islands is especially noteworthy as nearly 50 species are confined to the mountains, which have in addition nearly 500 lowland species. No fewer than 561 species are endemic. The outlying islands of the group have 55 endemic species. The presence of the subantarctic element in the flora, Dr Cockayne thinks, points to a former bridge of land or chain of islands which linked the group to an antarctic continent or to South America or Tasmania. Hybridism in the New Zealand Flora, in New Phytologist 105, 1923. The writer has divided the natural hybrids which occur in New Zealand into two groups:—(1) hybrids between species, and (2) hybrids between the varieties within an aggregate species. About 128 hybrids are given, but he thinks the number is certainly too small. Of the "hybrid between species of wide range, often belonging to the same associations, which frequently grow in close proximity, where the opportunity for crossing is at the maximum " the number is 27, those when the " parent species only meet occasionally ' number 13. Of " hybrids between species of different, but considerable, latitudinal range, which, from a definite point, grow in close proximity for a certain distance " 30 occur. The hybrids in the closely allied groups (4) and (5), the latter of which consists of hybrids between species usually growing under dissimilar ecological conditions which occasionally come together, number 50. Hybrids between species of more or less limited range which frequently grow together number only 5. Mr Cockayne makes no allusion to the interesting fact which Sir Joseph Hooker mentions that *Sonchus asper* and *oleraceus*, which very rarely hybridise in Britain, do so frequently in New Zealand. The examples he draws from native plants are highly instructive. My own experience suggests that plants brought from a different area are more apt to hybridise than when two species live side by side in their native home, so too when the health of the species has been reduced and its life is at a low ebb. In certain genera where the mutual sterility of the allied species has broken down, the offspring, when fertile, seem more prone to cross with other species. Such fluid genera as the Roses, Brambles, Willow-herbs leap to the mind, and they stand in a somewhat different category to wind-fertilised plants such as the willows and grasses.

CORREVON, H. Album der Orchidées. 66 coloured plates, pp. 66, 1923.

CUMMING, LINNAEUS. LIST OF THE PLANTS FOUND IN THE COUNTRY AROUND RUGBY. pp. 48, 1923. Our member has performed a useful service in bringing together the various plant-records connected with the district surrounding Rugby School, of which for many years he was the popular Science Master. The former list, published by the Natural History Society of the School, was issued about 1875, and was restricted to ten miles around Rugby. The present area is not so strictly limited, since we notice Barnack in Northamptonshire is quoted for *Hippocrepis*, *Astragalus danicus*, *Aceras*, *H. Gymnadenia* and *Orchis pyramidalis*. If that distance from Rugby has been uniformly adopted the List might have been greatly increased in numbers. Edgehill, Kenilworth, and Groby Pool in Leicester are also given. Indeed *Anemone Pulsatilla*, *Hypochaeris maculata*, *Senecio integrifolius*, *Orobanche major* are, among others, plants of the Barnack area. *Melica nutans*, the two Hellebores, *Melampyrum cristatum*, *Orchis praetermissa* are also in the vicinity. It would have been well to have put the name or initials of county in which the plants occur, as it is not easy for the stranger to know which is meant, or whether the species is common to two or three counties, if indeed Leicestershire localities come in. Among the queries which arise in going through the List we may select a few. *Fumaria muralis*, Rectory garden at Harborough Magna, W. O. Wait. This is almost certainly an error. Probably *F. Boraei* is the plant meant. *Lepidium* (*heterophyllum*) *alatostylum*, Ufton Wood. Has this been seen by an authority? Bagnall does not record it. I have seen *L. campestre* there. Surely *Viola silvestris* is to be found in the area. It is plentiful in Whittlebury Forest, Northants, and Ufton Wood, Warwick. On the other hand I have not seen *V. canina* (which is said to be common) near Rugby, a district, however, of which I have only a slight knowledge. *Elatine hexandra*. " Seeds of this species came down from a specimen of *Montia* gathered in a cart rut at Frankton Wood," seems cryptic, and requires elucidation. " *Rosa agrestis inodora*." Bloxam's plant from Harborough Magna is *R. Blondaeana*. " *R. Andrzeiovii Sherardi* " can hardly be guessed at. The difficulty of using a specific name in two senses is to be seen under " *Crataegus Oxyacantha* L., the Hawthorn Hedge Plant," which is said to be doubtfully wild. *C. oxyacanthoides* is presumably meant, but it is certainly native in Ufton Wood and elsewhere. It is not the common hedge plant, that being *monogyna* as almost invariably sent out by nurserymen. By " *Callitriche palustris* " *C. stagnalis* Scop. is presumably meant. I have seen it near Rugby. *Crepis taraxacifolia*, only given for Bretford, is common. I have seen it at Ufton Wood, etc. One very much doubts the record of *Hieracium crocatum*. I have seen *H. brunneocroceum* on the railway between Rugby and Coventry. Is not *Leontodon nudicaule* to be found in the area? Baxter found *Jasione montana* on the Hill Morton Road. Perhaps it has been destroyed. There was a small but rich bit of heathland there. Surely *Cynoglossum* is found nearer Rugby than Barnack. It is plentiful at Cosgrove, Northants, and I have seen it about Stratford-on-Avon. *Cuscuta epithymum* is not the Flax Dodder. *Euphrasia nemorosa* occurs in the area. *Polygonum mite* is given from "watery places" without precise locality. Bagnall does not include it for Warwickshire. Is it correctly named? The difficulty which arises when a name has been used in two senses is met with in regard to the Elm. Which "*Ulmus glabra*" is intended? I have seen the Wych Elm, *U. montana*, and the smooth Wych, *U. carpinifolia*, in the area as well as the English Elm and Plot's Elm. Two only are mentioned, neither native. It would be interesting to know if *Carpinus* is native in Brandon Wood. It is said that "*Quercus Robur* in hedges and woods is not naturalised." Presumably it is a true native of the area. *Salix rosmarinifolia* is reported by Mr Thomas from two stations in Newbold, as an escape from gardens where it has been cultivated. Additional information on this would be greatly valued, as so little is known about its existence in Britain. *Populus nigra* is doubtless *P. serotina* which occurs near Rugby, but I have seen the true *P. nigra* near Tamworth, etc. It is more than likely that the *Orchis latifolia* mentioned is really *praetermissa*, and that the *O. maculata* "from all our woods" is almost certainly *O. Fuchsii*. *Habenaria bifolia* may be added to the List. I saw it in Ufton Wood last year. Do both *Juncus compressus* and *Gerardi* occur at Napton reservoir? Bagnall thought all the Warwickshire plants belonged to *Gerardi*. *Carex extensa* from canal side near Hill Morton is an error. It is a littoral species. Mr Cumming kindly sent me the specimen, which is not *extensa*, but an abnormal form, possibly of *C. acutiformis*. *C. Oederi* from a pool outside Brandon Wood is most likely *C. flava*, var. *oedocarpa*, which occurs. Another misnomer is *Koeleria vallesiana* from the slopes of Brandon Castle. If correct, it would be a very important record. Of course *Melica nutans* means *M. uniflora*. The true *M. nutans* occurs in Northants in Bedford Purlieus. One wonders if the unlocalised *Bromus arvensis* is correctly named. It is only adventive in Britain. The Dallington *Valerianella* proves to be *V. olitoria*, not *eriocarpa*. Mr Cumming, as the pages of our *Reports* show, has devoted much attention to Rubi, and a considerable number of important records have been made by him which enrich our *Reports*. We are especially glad to see that Botany is once again coming into its own at Rugby.

CURTIS' BOTANICAL MAGAZINE, under the editorship of Dr O. Stapf, is having a new lease of life, and has produced some excellent numbers during the year. Annual subscription, 63/- net. H. F. Witherby, 326 High Holborn, London. 165 of the early drawings, 1830-1834, for Curtis' *Bot. Mag.* have recently been presented to the Royal Gardens, Kew, through the kindness of Mr A. Bilney, who had previously given them to the Horticultural Society. See *Kew Bulletin* 176, 1923.

DALGLEISH, E. FITCH. OUR WILD FLOWERS AND HOW TO KNOW THEM. pp. 127. Thornton Butterworth, London, 1923; 4/-.

DALLIMORE, W. & JACKSON, A. BRUCE. A HANDBOOK OF THE CONIFERAE, INCLUDING GINKGOACEAE. pp. xii., 574, tt. 32. Edwin Arnold, London; 42/-.

DALLMAN, A. A., F.C.S. THE FLORA OF FLINT AND DENBIGH. To subscribers, 21/- a copy. Orders to A. A. Dallman, 17 Mount Road, Higher Tranmere, Birkenhead. The work promises to be a very complete and scientific one, and should be supported as far as possible by our members.

DANSER, B. H. Bijdrage tot de kennis van eenige Polygonaceae, in Nederl. Kruidk. Arch. 208-249, 1920. De Nederl. Polygonumbastaarden, *l.c.* 154, 1921. Bijdrage tot kennis der Nederl. Rumices, *l.c.* 167-228, 1921. De Nederl. Rumex-bastaarden, *l.c.* 231-271 et no. ii., *l.c.* 1-36, 1922. Contribution à la Systématique du *Polygonum lapathifolium*, a thèse, in aula der Universteit van Amsterdam, June 29, 1921. Five new *Rumex* hybrids in Holland, in Rec. des Trav. botan. Heerlandsis xix., 293, 1922. Describes *Rumex Kloosii* (*dentatus* × *maritimus*), *R. Didericae* (*maritimus* × *obovatus*), *R. Thellungii* (*dentatus* × *obovatus*), *R. Hagensis* (*Patientia* × *pulcher*), and *R. upsaliensis* (*dumosus* × ?).

[DAY, F. M.] FLOWER LIST. The Downs School, Colwall, 1923. This is a list, arranged in the alphabetical order of the English names, of about 440 species found within reach, that is about 4 miles, of Colwall School, near Malvern, mostly on the Herefordshire side of the Malvern Hills. It seems quite carefully and accurately prepared, and includes some interesting plants, including the introduced *Bupleurum fruticosum* and *Polemonium caeruleum*. *Rumex sanguineus* is doubtless a misnomer for *R. condylodes*. There is no mention of *Sagina Reuteri* (which may be outside the zone) nor are the Rubi, Rosaceae, Hieracia and Naiadaceae included.

Dobbie, H. B. New Zealand Ferns. pp. 394. Whitcombe and Tombs, 1921; 35/-.

Domin, Prof. Karl. Dichotomy and Chorisis. Bull. Intern. de l'Acad. de Sciences de Bohême, April, 1923. Contributions to the Morphology and Teratology of Plants, *l.c.* May 1923. Coleophylly in *Ranunculus bulbosus*. Evolution of leaves in *Sambucus nigra* and *Ononis spinosa*. An interesting ecological form of *Thymus ovatus* Mill. The coalescence of the flower-bearing stems of *Ranunculus Ficaria*. A simple sympodium in *Capsella Bursa-pastoris*. A Phytogeographical Outline of the Zonal Division in the Western Carpathians besides some general remarks on the main Forest Trees. Fac. des Sciences de l'Univ. Charles, 1923. A delightfully interesting account of a fascinating district illustrated with beautiful photographs of the High Tatras, the Barrens of Liptov, the limestone Alps of Bela, the virgin beech forest in Western Slovakia, and of *Pinus Cembra* in the High Tatras. Outlines of the Flora of Slovakia and Subcarpathian Russia and its Classification in Natural Districts, in Vestnik, 23, 1923. New Additions to the Flora of Western Australia. pp. 123, Prag, 1923. The paper was prepared in 1912 and its publication has been delayed owing to the war. Much of it is from unworked up material collected by Capt. A. A. Dorrien-Smith, D.S.O., and Dr E. Clement which is at Kew. A large number of new species are described including *Protea glabriflora*, *Corospermum Dorrienii*, *Grenvillea crassifolia* and *Loboana*, *Dryandra Dorrienii*, *Leptomeria Rohleanae*, *Billardiera Dorrienii*, *Mirbelia trichocalyx*, *Jacksonia calycina*, *Gastrolobium crispifolium*, *Dillwynia incerta*, *Acacia Inceana*, *A. cupularis*, *A. Goadbyi*, *Pelargonium Haviasae*, *Boronia Vilhelmii*, *B. tenuior*, *B. integrifolia*, *Platytheca juniperina*, *Amperea Podyperae*, *Stackhousia occidentalis*, *Hibbertia quadricolor*, *Chamaelaucium confertiflorum*, *Melaleuca Dorrien-Smithii*, *Eucalyptus agnata*, *E. Dorrienii*, *Lysinema Ewartianum*, *Solanum Inceanum*, *Calocephalus Priceanus*, etc.

DREWITT, F. DAWTREY. THE ROMANCE OF THE APOTHECARIES GARDEN AT CHELSEA. pp. 106. Chapman & Dodd, Ltd., London and Sydney, 1923. The history of so early an established Physic Garden as that at Chelsea, which is the second oldest in England, dating as it does from 1670, cannot be without romance. It was an idealistic institution associated with commercial surroundings. Founded by the Apothecaries Company, whose motto is "Opiferque per orbem dicor" it mingled in symbiotic union the professional and the commercial; and the garden was an evidence of the Company's appreciation of the higher mandate. Thomas Johnson, a celebrated botanist, and an old member of the Apothecaries Company, was one of the founders of Botanical Field Clubs. He was himself an explorer of the mountains of Wales, became the author of the *Mercurius Botanicus*, and edited the second edition of Gerard's *Herbal* in 1634. He had a shop in Snow Hill close to the Fleet and there, says Dr Drewitt, he showed the first bunch of bananas to be seen in London, which he hung in his window from April 10 to June 10, 1633. This bunch of bananas is engraved on the artistic title page of the *Herbal*. Dr Drewitt narrates in a graceful style the Garden's history through the various reigns, and illustrates the text with some charming photographs. Its history was not unchequered. Like the apothecaries themselves the garden was always in a condition of straitened means, albeit they started with a moderate rental of £5 per annum. At that time, Dr Drewitt reminds us, Chelsea was in the country—"it had its cornfields, pasture, common land, and its village by the water. It was bounded on three sides by rivers—two of them small streams." The largest, the Westbourne brook, formerly flowed by Westbourne Terrace into Hyde Park. Of this stream the present Serpentine is a relic. Half a century later Sir John Hill had his physic garden on its banks not far from Lancaster Gate where in an inundation great harm was done to his treasures. Dr Drewitt points out that the huge iron tube which can be seen over the heads of passengers at Sloane Square Station conveys the water of this old Westbourne brook to the Thames near the grounds of Chelsea Hospital. At the time of the Garden's foundation many fish were caught in the Thames at Chelsea Reach and the nets had good hauls of salmon in the spring. In 1682 the garden was visited by Dr Hermann of Leyden. Many of his specimens were acquired by Sherard and are now at Oxford. Four Cedars of Lebanon were obtained from Leyden and of these one remained as recently as 1903. In 1732 they bore the first cones produced in Britain. The immortal Ray alludes to the Chelsea Cedars in his Philosophical Letters. The author gives a pleasing account of the discovery of Cinchona, of the appointment of Samuel Doody and James Petiver, the latter acting as Demonstrator of Botany. Dr Drewitt alludes to the grotesque and imperfectly drawn depiction of animals by Petiver and other scientists of his time as compared with their excellent delineation of plants. He explains this as being caused " by the plants being more accessible, and that they were perfect sitters. Not so the Animals." Yet in the early ages of man, in the pictures drawn by the Cave Men, the reverse occurs. The animals caught in the chase or which they had domesticated are drawn with realistic vigour while scarcely a representation exists of a plant or tree. Even in the early ages of Greek art the figures, for instance, on the Vaphian cup of the bulls in fierce action are so finely depicted that the race of the animal may be recognised, whereas the trees under which the combat or the capture takes place are so conventionally drawn that it is rather a guess than a real identification which enables one to suggest they are olives. About the year of the great Storm Sir Hans Sloane became the landlord and in 1722 he conveyed the Physic Garden with its greenhouses, etc., to the Company for a yearly payment of £5. There were conditions attached to this agreement which were made in the interests of general science. An excellent account is given of Sir Hans Sloane and the history of his illness. It might well be made more widely known, now that tuberculosis is so much in evidence on public platforms or in the public press. When a lad of 16 Sloane had severe haemorrhage and was laid up for three years, yet he mended and in time became a most popular and successful physician dying at the advanced age of 93. This case is almost paralleled by that of Sir Andrew Clark. His life is not the least romantic episode which Dr Drewitt has so skilfully detailed in these delightful pages. Sloane founded the British Museum. Sloane Street commemorates his name and life and not unhappily, as we are told, " it is very long, obviously prosperous and perfectly straight." Then comes the advent of the Millers, and we are told how Philip published his *Gardeners' Dictionary* in several editions. One of these, issued in 1754, is the earliest botanical book to appear after the first edition of Linnaeus *Species Plantarum* in 1753. This work of Miller's has been ignored by continental compilers, yet Linnaeus generously and justly said it is a " Dictionary not only of Horticulture but of Botany." Linnaeus visited Miller but Miller was not impressed with him and thought him ignorant, especially of Botany, but it must be borne in mind that Miller resented the ignoring of some of the Tournefortian genera. Sir Hans Sloane, too, was bored with Linnaeus. At Oxford Dillenius received him coldly and in an aside to Dr Shaw said " this is the young man who would bring confusion into Botany," but hearing Linnaeus discuss *Linaria Cymbalaria* so excellently he became an admirer and in a few days offered to divide his not too liberal stipend if he would stay and work with him at Oxford. This offer was not accepted, but in return Linnaeus connected the name of Dillenius with the *Dillenia*, a genus of plants " of all plants the most distinguished for the beauty of its flowers and fruits as Dillenius is distinguished among botanists." And so with one link after another with the past the charming narrative goes on, so that in addition to the work of Field and Semple on the Chelsea Physic Garden we have this eminently readable book which has made the dead bones of the past live again.

ELEY, CHARLES. GARDENING FOR THE TWENTIETH CENTURY. pp. 256, tt. 28. John Murray, London, 1923. This clearly printed, well written, and copiously illustrated volume is designed to interest beginners in the most fascinating of all pursuits and to lead him or her in the right paths, so that their efforts may be of more than transitory value and produce gardens of real beauty. The author, years ago, was introduced to one of the leading lights on garden lore. At the end of a most useful interview the renowned horticulturist asked of his interviewer " Who was it inoculated you?" He was told. " Well," was his comment, " you got hold of the right virus." The reader of Mr Eley's book may certainly claim that he went to the right source for information and if he has not been a complete success, the failure—greater or less—will be in no sense due to the manual he has consulted. Many of the beautiful illustrations have already appeared in the pages of *Country Life.* Mr Eley gives great praise to the Royal Botanical Gardens at Kew, and rightly so, since their contiguity to the besmirched neighbourhood of a great Capital with its unstinted smoke-cloud renders the success it has reached all the more praiseworthy. But as Mr Eley says, the time has come when another garden or gardens for the wonderful output of Chinese discoveries, due to such explorers as Farrer, Kingdon Ward and others, should be established in Britain. As he points out the wonderful Arnold Arboretum in Massachussets has been increased to 250 acres with an endowment of well nigh a million dollars. Edinburgh and Glasnevin are rightly praised as is Cambridge Botanic garden with its many fine trees. The Oxford garden possesses the finest *Sophora japonica* in Britain but the area is too small for large trees. It is high time that the University of Oxford established an Arboretum to link up the grounds of Magdalen College with the Parks, and its outgrowth into the Marston fields and this, without any huge expenditure, might well be made of extraordinary beauty and utility, although the limey gravel alluvium would necessarily shut out many species. The author's hints on public parks and how they should be planted, are most valuable. One is glad to see that due commendation is given to the arrangement of the Victoria Park at Bath which is a delightful thing of its kind. How little attention, and that too frequently not of the right order, is paid to the planting of parks or open spaces in Britain. Yet the English people are notoriously fond of flowers as the thousands who visit Bushey Park on Chestnut Sunday show. In 1921, 1,236,308 people visited Kew despite the prosaic journey from the Metropolis. Mr Eley has a charming chapter on the delights of Canon Ellacombe's garden at Bitton which although not larger than two acres had an extraordinary number of interesting trees and shrubs. One may also recall the great beauty and interest of St John's garden at Oxford which, like

Canon Ellacombe's at Bitton, had a presiding genius in the late Rev. H. J. Bidder. There are excellent chapters on garden-making and on the choice of soils, "the ideal being a deep and sandy loam free from lime." Two important factors to bear in mind are "wind and excessive sunshine" and the motto to remember is "festina lente." "Repose should be the prevailing characteristic of a satisfactory garden" and a loggia is a most desirable addition. Having acquired a suitable site the question arises as to what plants should be put in it. On this critical subject excellent advice is given. For shade purposes, in gardens large enough to hold them, young trees of the Horse Chestnut are recommended. They should be planted in an irregular group about 14 feet apart. This will give room enough for tea-parties to shelter under. The Norway Maple is also suitable for such a purpose. The Black Italian Poplar is recommended as a quick growing tree, but to the writer it is the abomination of desolation when planted in small gardens or near a house and, Mr Eley says, "planters who rightly value the blessings of posterity will avoid the use of them." But a good word may be said in favour of *Quercus Cerris*. Personally I love the *Ilex* if there are red brick walls about. Box hedges, too, in a sunny corner near an old brick wall are delightful. One is glad to see a good word is said in favour of the cheerful *Viburnum Tinus*, and the bright *Berberis stenophylla*. The Bamboos are warmly praised and an excellent figure of *Arundinaria fastuosa*, which has erect stems over 20 feet high, is given. He rightly says the maker of a permanent garden must resign himself to the prospect of constantly and vigilantly moving certain of his plants from time to time. How true this is will be acknowledged by any visitor to Westonbirt, for there he will see what magnificent effects have been obtained by careful and thoughtful removals of shrubs and trees to the most suitable situations. The author is strong in his praise of yew hedges and holly holds a good second place. He correctly alludes to the neglect of the hornbeam in England. Anyone who has seen the walls of verdure given by the hedges of Hornbeam at Versailles or Schönbrunn will feel what justice there is in his complaint. He gives due praise to the evergreen oak as a material for a tall hedge. How well it forms a background for a pergola of rambler roses may be seen at Goodwood. Mr Eley brings into notice the

Chinese *Lonicera nitida* as having great claims for those who want a hedge of 3 to 6 feet within the garden. There is a suggestive chapter on Conifers and a very useful one on Maples, *Aesculus* and other deciduous trees. Mr Eley's name is connected with the very beautiful hybrid, *Pyrus Eleyi*, a crab-apple with reddish-purple foliage, rich vinous-red clustered flowers, and purplish-red fruit like a Morella cherry. Good illustrations are given of it in several stages of growth. A high place is given to the silver lime, *Tilia petiolaris*, with its cascades of foliage. One lingers over each page of this well written book and one is tempted to quote freely from it, but enough has been said to prove that it is a work which should be in the possession of all those who love gardens and gardening. To any who are tempted to begin gardening the advice of the author is " Do not loiter too long at this entrance gate, but drive steadily on, and good luck to you."

EVANS, A. H. THE NATURAL HISTORY OF WICKEN FEN. Edited by J. Stanley Gardiner, F.R.S. and A. G. Tansley, F.R.S. Bowes and Bowes, 1923. In this compact and useful little work our member, Mr A. H. Evans, gives (1) The Fens of the Great Level, their Drainage, and the effects on the Flora and Fauna; (2) Full List of Plants growing in the Old Fen Land at Wicken; (3) The Terriers of Wicken and Burwell Fen Estates. Mr W. Farrer supplies part (4), the Lepidoptera of Cambridgeshire. The English Fenland Mr Evans estimates as having an area of about 73 by 36 miles. It lies in the counties of Lincoln, Norfolk, Suffolk, Cambridge, Northamptonshire and Huntingdonshire. The present Wash is a diminished remnant. The island of Ely is one of the ridges of the Jurassic beds which escaped the cutting out of the fen-basin. Five separate horizons of submerged forests have been determined in the peat districts, the two lowest of yew and oak, the two next of fir, and the highest of alders, willows, hazels and even gorse. These five periods of forest growth were followed by five periods of swamp which were sufficient to kill large trees. The earliest post-glacial vegetation must have consisted of plants which grew with their roots or even their stems in water. The Romans, during their occupation, set about a wide system of drainage banking out the sea along the coast line of Lincolnshire, Cambridgeshire, and part of Norfolk. They cut the Car Dyke from Lincoln into Cambridgeshire as a catchwater for the upland streams. Six and a half centuries passed between the departure of the Romans and the appearance of the Norman invaders without witnessing any great extension of the drainage system. Mr Evans quotes a vivid description from the twelfth century *Liber Eliensis* which shows the condition of things at that time " when Stags and Roes were to be found in its groves." The history of the drainage scheme carried out by the Earl of Bedford and his fellow adventurers which was completed in 1653 is given. Whittlesey Mere was drained in 1851-2 which resulted in the extinction of the Large Copper Butterfly. The special object of this book is to describe Wicken Fen which, owing to the generosity of Mr G. H. Verrall and of the Hon. N. C. Rothschild, has been definitely preserved in its undrained and uncultivated condition for the nation. It consists of over five hundred acres, and it is hoped that eventually about six or seven hundred acres may be secured. No one can speak with greater knowledge about the Birds than Mr Evans. He tells us that the Bittern boomed in this area until 1868. A full list of the plants growing in the old fen land at Wicken is contributed. It numbers about 190 species. Among the more interesting are *Ranunculus Lingua*, *Viola stagnina*, *Rhamnus Frangula*, *Aster salignus* (but another species is said also to grow there), *Liparis Loeselii*, *Orchis praetermissa*, *Potamogeton coloratus*, *Cladium*, *Schoenus*, *Carex lasiocarpa*, *C. elata*, *C. paradoxa*, *Alopecurus fulvus*, *Calamagrostis canescens*, and *Dryopteris Thelypteris*, *Senecio paludosus* being extinct. I think, however, *Carex Oederi* may be added to the list. The rare pondweed hybrid. *P. perpusillus* Hagstr. = *P. coloratus* × *pusillus* was found by Mr Bennett in Burwell Fen which may be just outside the limit from which the list is prepared. We may congratulate the author on compiling so useful a handbook and may take this opportunity of saying how pleased Mr Evans's numerous friends will be to hear of his recent doctorate.

FYSON, Prof. P. F. THE INDIAN SPECIES OF ERIOCAULON. pp. 88, tt. 51. Methodist Publishing House, Madras, 1923.

GAMBLE, J. S. FLORA OF THE PRESIDENCY OF MADRAS.

Ebenaceae to Scrophulariaceae. pp. 769-962. Adlard & Son & West, Newman, London; 1923; 10/-. *Neohouzea.* A New Genus of Bamboos. in Kew Bulletin 89, 1923.

GANDOGER, M. L'Ascension du Mont Ida, Ile de Crète. Bull. Soc. Bot. France, 80-84, 1922.

GARDENERS' CHRONICLE, 1923. Price 6d weekly. 5 Tavistock Street, Covent Garden, W.C.2. This publication maintains a high standard of excellence. On p. 8 there is an illustration of *Iris germanica* taken from an old MS., presumably, as Mr Savage says, of about 1500, which is preserved in the town of Poitiers in the Bibliothèque Municipale. There are fifty pages of rather coarse vellum painted with 101 subjects which, with the exception of two, are native to the district round Poitiers. The figures are painted in body colour, a similar method to that employed in the brush-drawing of the Dioscoridean plants of the sixth century. The inscriptions are written, says Mr Savage, in the fine rubricating ink that never seems to fade and comprise the names of the plants, with in some cases the medicinal qualities, and even the habitats. Mr Kingdon Ward continues his interesting account of his seventh Expedition into China and enumerates a wonderful list of species. Ken Wood. One hundred acres of this estate have been purchased at £1350 per acre the whole of which has been obtained by voluntary subscription. It will eventually be handed over to the London County Council. No part of the woodland has been acquired, but it is hoped that the habitat of the May Lily, *Unifolium Bifolium*, may be protected. A few more acres have been subsequently obtained. An illustration is given of *Ceropegia Brownii* at the base of a huge boulder in Uganda which is said to be its only known habitat. On p. 77 valuable details about Jane Loudon are supplied by Mr Britten. On p. 92 Mr Savage returns to the subject of flower-painters and gives a fascinating account of Jean Bourdichon (1457-?1521) who prepared a vellum manuscript called *Livre d'Heures de la Reine Anne de Bretagne* which is preserved in the Bibliothèque Nationale and at one time belonged to Louis XV, who allowed the botanist Antoine de Jussieu to take it home for study. "Never before or since has such a wonderful prayer-book been produced, for the beautiful miniatures of plants which decorate it constitute a valuable early Florilegium. It contains 3337 paintings of divers plants. They are executed in body colour on a gold ground which is edged at the side with bright red, the same colour forming a base for the French name which is written in gold." Beautiful illustrations of the Black Currant, as painted by Bourdichon, are given. Camus gave a complete account and an alphabetical list, under the old French names, of the plants painted by the artist in the *Journ. de Botanique* vol. viii., 1894. Prof. Small, p. 244, gives the results of propagating by cuttings in acidic media. It has been found that watering cuttings of Privet, *Veronica*, *Chrysanthemum*, etc., with 1 in 10,000 of acetic acid stimulated in a marked degree the striking of these plants. Illustrations are given to show this. On p. 260 Mr Savage gives the earliest illustration of the Potato plant from a painting in the Plantin-Moretus Museum at Antwerp. The painting was sent to Clusius in 1589. See his *Rariorum Plantarum Historia*, 1601. Mr Savage says it is reasonable to suppose that *Solanum tuberosum* originated in Chile. It is called to mind that the portrait of Gerard affixed to his *Herbal* of 1597 in which he is depicted as holding a potato plant in his hand, bears the date 1598 in its description. On p. 320 there is an excellent account of Patrick Neill of Edinburgh, the author of *A Horticultural Tour*, published in 1823. Much interesting material is given, but there is no reference to his friendship with George Don. Neill took a great interest in him and in his children, and he wrote a Biographical Sketch of Don. See *Scots Mag.* July 1809. On p. 329 an account is given of the presentation of Dr Lloyd's herbarium to Kew. The plants, 250 in number, were collected in 1825-43, and include some Channel Isles specimens—*Ononis reclinata*, *Ornithopus pinnatus*, and *Salvia Marquandi*. p. 359 gives an account of the Tercentenary of the Oxford Physic Garden, and on p. 22, July, pt. 2, is printed the address delivered by Sir David Prain on that occasion. On p. 52 there is a portrait of Sir W. Thiselton-Dyer. On p. 169 *Anemone ranunculoides* is said to be native of some districts in England. This is not correct. It is only rarely naturalised in Britain. p. 172 gives an account of a garden of Evergreen Shrubs at Malonya in Czechoslovakia. On p. 219 *Erica vagans* L., var. *St Keverne* is said to be one of the most striking and valuable additions that have been made to our garden Ericas for some years. On p. 244 there is a portrait of Dr Daydon Jackson, the genial Secretary of the Linnean Society.

Gates, R. Ruggles. A Peculiar Type of Variability in Plants, in Journ. of Genetics 13, 1923, with 24 text figures. Further valuable notes on *Oenothera* and *Nicotiana*, especially in connection with the size of corolla in cultures of *O. biennis* and *rubricalyx* crosses.

Handel-Mazzetti, Dr H. Floristische Mittheilungen aus dem Salzkammergute, in Verh. Zool.-Bot. Gesell. in Wien, p. 118, 1923. Shows that *Thymus pulegioides* L. is the oldest name for the plant we formerly called *T. Chamaedrys* in Britain = the *T. ovatus* Miller. Nachträge zur Monographie der Gattung Taraxacum, in Oster. Bot. Zeit. 254-275, 1923.

Harvey-Gibson, R. J. British Plant Names and their Derivations. pp. v., 50. A. & C. Black, London; 2/6.

Hegi, G. Illustrierte Flora von Mittel Europa. Fig. 1247-1278, 1279-1381. F. J. Lehmann, München, 1923.

Hjelt, H. Conspectus Florae Fennicae, vi. Scrophulariaceae-Dipsacaceae. H. Schildt, Helsingfors, 1923.

Holm, Theo. Report of the Canadian Arctic Expedition, 1913-8, vol. v.

Hughes, D. K. The Genus *Panicum* of the Flora Australiensis. *Streptolopus*, a new genus of the Graminaceae from Angola, in Kew Bulletin, 171, 1923.

Hutchinson, J. Contributions towards a Phylogenetic Classification of Flowering Plants. Kew Bulletin 65 and 241, 1923. This able paper treats of the genera of the Ranunculaceae and Anonaceae. The author agrees in keeping Papaveraceae and Fumariaceae distinct. He would also separate *Hepatica* from *Anemone*, but still unites *Pulsatilla* with *Anemone*. A most useful key to the genera is given. The affinity of *Rhododendron micran-*

thum, *l.c.* 299. *Primula calcophila*, the so-called wild form of *P. sinensis*, *l.c.* 99. In conjunction with Mr J. Burtt Davy a Revision of *Brachystegia* is given p. 129-163, 1923.

IRISH NATURALIST, 1923. Edited by R. L. Praeger. See *Erica stricta* in Co. Down, etc.

JACKSON, Dr B. DAYDON. LIFE OF LINNAEUS. Translated and adapted from the Swedish of Professor Fries. pp. xiv., 416. H. F. & G. Witherby, 1923; 25/-. Dr Jackson, who has done such good service to botanists by his " Index Kewensis," his " Glossary of Botanic Terms," his " Index to the Linnean Herbarium," and other works, has much increased our obligations to him by translating and condensing Professor Fries' Life of Linnaeus, and adapting it to English readers by explanations of Swedish life and terms which, without this help, would be difficult for us to comprehend. The interesting explanation which he gives of the surname of Linné will probably be new to many of us. From the genealogical tables given we learn that up to the time of the father of the great botanist the succeeding generations had been simply called (as was formerly the custom in Wales and part of England) by the addition of " son " or " dotter " to the Christian name of the father. Thus his father was Nils Ingemarson, his grandfather Ingemar Bengtsson, while his grandmother was Ingrid Ingemarsdotter, and her mother was Ingjerd Svensdotter. But his father, Nils Ingemarson, added to these names a surname, " Linne," invented from a famous Lime tree (in Swedish " Lind ") which was an object of much superstition in the neighbourhood. From the same tree Nils' brother-in-law took the name of Tiliander, the last half being Greek, while yet another branch of his relatives chose a name, Lindelius, seemingly from the same tree. A superstition arose in these families that, if one of the three main branches of the tree should die, the corresponding family would die out. By 1823 the tree was dead, but we are not told by the genealogists whether all three families have died out. Plant lore seems thus to have been a favourite subject of the families on each side, and to have enshrined itself in the very name of the great botanist, giving us also another example of heredity culminating in the production of a genius.

Carl Linné was born 1707 in a cottage in the village of Rashult, in the tenth year of the reign of that extraordinary warrior, Charles XII., whose life and eccentricities have been so well described by Voltaire. Soon after the birth of Carl his father became rector of Stenbroholt, and moved into the parsonage there. In this place was spent his childhood in the midst of botanical studies, his father having imbibed from his uncle, Sven Tiliander, a love of botany and of gardening, with which he speedily imbued his little son. In 1714, at the age of seven, he was sent to school at Växjö, and we have an interesting picture of school life and of the then " curriculum." The boy soon acquired the name of " the little botanist," but his teachers seem to have been dissatisfied with his progress in every thing except physics and mathematics. The rest of the course consisted of Hebrew, Greek, Theology and Metaphysics, as a preparation for the priesthood, which was the destiny of most of the students. At the age of 16 he passed into the " Gymnasium "—the Upper School—and came under the guidance of Lannerus, the Rector, who, being a lover of plants, encouraged him and helped him in his study of them. He was also befriended by Rothman, the " lector," who was sure that the boy would become a famous doctor and who, as long as he lived, was almost a second father to him. Rothman also impressed upon him a very needful truth for those days—that a mere knowledge of names was not botany, and that in describing and classifying one must know the structure of the flowers, as, *e.g.* it was at that time set forth by Tournefort. After 12 years of Växjö school it was time for him to go to a university, and he returned home to prepare for this advance. It has been the fate of many a distinguished man to encounter opposition on the part of his parents to the life which his tastes and genius marked out for him, and Linné was an example of this wayward fate. His parents were agreed in the wish that he should become a priest but, after a struggle, they had to consent that he should become a physician. His first University was Lund, where Stobœus helped him much, and allowed the young enthusiast the run of his library and museum. But Dr Rothman advised him to go to the greater university of Uppsala, and from 1728 to 1731 he was a student there. We have now given us a most interesting picture, well worth perusal, of the state of the University and of the students' life there. On his leaving home his parents could only provide him with a sum equivalent to £7 10s, so that we are not surprised to learn that he was soon plunged into the direst poverty. So poor was he that he even applied for the post of gardener in the botanic garden. But, as usual, his genius and enthusiasm soon made him a new friend, and this was Dean Olof Celsius, D.D., who in 1729 found him in the botanic gardens sitting and describing plants. Astonished at the knowledge of Linné, he treated him almost as a son, and invited him to share his meals. And it gives us a charming idea of the character of Linné to see how many friends he attracted to himself all through his life.

But the University seems to have been, at least as regards Botany and Medicine, in a most deplorable condition. The professors of Medicine, Rudbeck and Roberg, almost entirely neglected to lecture, and the "Medical Adjunct," Nils Rosen, was travelling abroad. The University Hospital was in a very bad state, and possessed no facilities for clinical teaching, not even a chemical laboratory. Equally deplorable was the condition of the Botanic Garden, and the only compensation was that our student had the use of the fine library, and that Roberg allowed him the use of his library as Stoboeus had done at Lund. About this time he made the acquaintance of Vaillant, who had written a tract on the sexes in plants, and the result of this was that Linné also wrote on the subject. His tractate gained him such an increased reputation that, though only 22 and still a student, he was asked to lecture in the Botanic garden.

Dr Jackson now graphically describes Linné's journey to Lapland. The reason for this expedition was that the collection which Rudbeck had made there had been destroyed in a disastrous fire. His adventures were such that one feels astonished that he ever returned to Uppsala. Food was scarcely to be got, and, when it was, it cannot be said that fish garnished with maggots was a tempting dish. There was also the sporting change of being "potted" by a Lapp who might be suspicious of a stranger. On one occasion a bullet just missed him. But the whole story must be read to be appreciated. The term 1733-1734 was his last student year, and in 1734 he began other travels abroad. At Hamburg we have the amusing story of a strange monster which belonged to a burgomaster. It possessed seven ferocious heads, but the experienced naturalist quickly perceived these to have belonged to seven weasels, whose conjoined body had been covered with a snake skin. The King of Denmark had offered £4,500 for this marvellous production of nature, but the burgomaster had been rich enough or foolish enough to refuse the money. No doubt the diagnosis of Linné soon leaked out, and for fear the burgomaster should make trouble over it Linné fled from Hamburg. At Leyden he was fortunate enough to secure a patron who paid for the printing of his celebrated " Systema Naturae." This modest production consisted of only eleven folio pages. At Leyden, too, he became acquainted with Boerhaave, a great physician, who persuaded him to look after the health and the zoological and botanic gardens of a wealthy man, Clifford, who took great interest in these subjects. This was at Hartecamp, a place between Leyden and Haarlem, and was the headquarters of Linné till in 1737 he thought it time to return home and claim his bride, to whom he had been engaged since 1735.

But to us the most interesting episode of this period is his visit to England where in Oxford he encountered Dillenius. " Encountered " is the right word, for at first Dillenius was extremely antagonistic, and called him " this young man who is bringing botany into confusion." However, Linné at last persuaded him to a conference, with the result that Dillenius was persuaded of the correctness of the views of Linné, and they became such friends that Dillenius tried to persuade him to settle in Oxford, and parted from him with tears in his eyes. From 1738 to 1741 he practised as a physician at Stockholm with such success that he was in attendance on the Queen who, as well as the King, was much interested in his botanical work. But the work of a Doctor was not really to his liking, and after his marriage he returned to Uppsala. There he was diligent in teaching and publishing and in getting the Botanical garden into order. Uppsala remained his home until his death. He was appointed by the King Professor of Medicine and Botany.

Dr Jackson now gives us Linné's own description of himself, for Linné was almost as fond of writing autobiographies as was Gibbon. " Rather short than tall," he tells us, " more lean than fat, with muscular limbs, large head, brown hair, brown eyes, pale face, eyesight excellent, teeth bad, no ear for music.'' One of his pupils says that he was moderate in food, very abstemious in (alcoholic) drink, but drank coffee and used tobacco to excess. His son tells us '' He rose early, lit his fire, and sat down to work. If he felt in the least tired he threw himself on his bed, slept at once, and was up again and at work in a quarter of an hour.'' We may well believe that there was great attraction in his character from the way in which, wherever he was, he gained friends and patrons. But for this he could never have surmounted the difficulties caused by his poverty. We gather too that, like his parents, he was of unfeigned piety. Over his bedroom door was inscribed, '' Innocue Vivito, Numen Adest,'' and his queer little tract, '' Nemesis Divina,'' consists of cases in which he thought that sin brought punishment in this world. Some are extremely amusing. He also, like Robinson Crusoe, drew up a list of things in his life for which he had reason to be thankful.

His great gift to the Naturalist world was his enforcement of the necessity of method and classification. '' I was born a Methodist,'' he says. He classified mammals, birds, fishes, insects, even stones, as well as plants. In botany he first followed Tournefort, but soon rejected his system. After reading Vaillant he wrote (as we have seen) on the sexual system in plants, and adopted this as the basis of his classification, but he well knew that this was only an artificial system, and not the true system of nature, since it brought together, in many cases, plants of widely different nature. He tried therefore all his life to work out a true system in which affinities were to be determined by the sum of the characters of organs. He clearly set forth some natural families and laid the foundations of a true natural system. But he saw great difficulties in the way and urged this plan upon others, saying it is '' The first and last of desirable botanic objects.'' Like other men of genius, he was far sighted as to many points of future science, especially in botany. He studied the geographical distribution of plants, perceived the metamorphosis of leaves into pistil and stamen and floral envelopes, the discovery of which has been too hastily attributed to Goethe, and examined hybridisation, seed dispersal, sleep of plants, and protective growth. He surmised, in a lecture, that some diseases might be caused by minute animals or plants, and that fermentation and putrefaction might be produced in like manner. As regards the theory which we too fondly conceive to be the discovery of our own days, Evolution, he began with laying down the principle that " Species tot numeramus quot diversae formae in principio sunt creatae," but in later writings he speaks of certain species as being " the daughter of the preceding species," which clearly involves some anticipation of Lamarck and other evolutionists, but, of course, without the conception of either of the *methods of its working* advanced by Lamarck or by Darwin. Another of his gifts to system was the introduction of the " trivial " names instead of the long and inconvenient descriptions which we find in their place before his time.

His health was extremely bad in the later years of his life, yet he lived to be 71, and died January 10, 1778. Ten years later the Linnaean Society was founded, and this keeps before us the name of the greatest botanical genius and the pioneer of classification in natural history.

DEUS CREAVIT, LINNAEUS DISPOSUIT.

And the importance of his work will be all the more clearly seen if we reflect that the classification of plants and animals must necessarily lead to the idea of family relationships, and so to our modern philosophy of natural history.

Professor Fries' Life will have left very small gleanings as to Linné for any future students of his life and work, and Dr Jackson's translation will doubtless remain for English readers *the* storehouse for all things relating to Linné, and a necessity for those who wish to extend their knowledge of the most interesting period in the history of botany. F. BENNETT.

JAMIESON, H. G., M.A. ILLUSTRATED GUIDE TO THE TREES AND FLOWERS OF ENGLAND AND WALES. pp. 148. Simpkin, Marshall, Hamilton, Kent & Co., London, 1923; 3/6. This little work gives a key to the Flowering Plants of Britain, with little illustrations of the flowers or important diagnostic characters. The Apetalae are omitted as well as the Pondweeds, etc. It will assist the beginner to overcome some of the stumbling-blocks which lie in his path.

JOHNSON, STANLEY C. GRASSES AND RUSHES AND HOW TO KNOW THEM. WILD FRUITS AND HOW TO KNOW THEM. FLOWERING

SHRUBS AND HOW TO KNOW THEM. Holden and Hardingham, London; 2/- each.

JOHNSTON, Col. H. H. Additions to the Flora of Orkney, in Trans. Bot. Soc. Edin. 98, 1920-21.

KEW BULLETIN, 1923. Published by H.M. Stationery Office. This very useful and inexpensive publication contains an excellent Biography of Sir Isaac Bayley Balfour, and one reprinted from *Gard. Chron.* of H. J. Elwes. There is also a reference to the death, through a motor accident in Uganda, of Richard Arnold Dummer (p. 94). An announcement is made which will give British Botanists great pleasure, that our Editor and Distributor of last year's *Report* has been appointed assistant in the Herbarium (p. 128). There are " Diagnoses Africanae," ten new species, on p. 180. On p. 239 there is a paper on " The Citation of Generic Names in the Index Kewensis." In the early volumes this dates from 1737, a date more recently altered to 1753, in order to comply with the *Vienna Actes.* It is suggested that for the earliest valid citation Dalla Torre and Harms' *Genera Siphonogamarum* should be consulted. This is jumping from the frying-pan into the fire, since the authors of the *Genera* have, in scarcely any instance, cited Hill's *British Herbal* or Miller's *Gard. Dict.*, so that *Asteriscus*, *Larix*, *Melilotus*, *Abutilon*, *Arisarum*, *Onobrychis*, *Lens*, *Castanea*, ***Alnus***, and a multitude of other names have belated authorities cited for them. Adanson's *Famille des Plantes* is very frequently cited instead of the earlier work of Miller. This I pointed out in the pages of this *Report*, 426-440, where a full list of Miller's names, which have precedence over those given in the *Index Kewensis* or in most cases over those used in the *Genera*, are given.

KIRKWOOD, ESTHER J. C. PLANT AND FLOWER FORMS. Studies of Typical Forms of Plants and Plant Organs. A series of eighty full-page plates of Typical Plant Forms, Floral Diagrams, Sections etc., intended primarily as an accompaniment to the ordinary text-book, but able, it is believed, to give pleasure to the many lovers of flowers and plant-life who are happily independent of teaching and examinations. Sidgwick & Jackson, Ltd., London. 1923; 7/6. The illustrations are well drawn and clearly repro duced and, although technical terms are perhaps too freely used, the drawings serve in most cases to explain them, hence the work is recommended to supplement an ordinary text-book which too often lacks such help. One mis-statement, doubtless due to the use of an old Manual, should be corrected in a future edition—namely this, " the Bee Orchid is not found in Scotland or Ireland." This should be altered to " rarely," since *O. apifera* has been found both in Ireland and Southern Scotland. The terms sympodium and monopodium might have been more clearly described. A useful Summary of Botanical Terms and a good Index are given. The glossary might have been made more useful by appending the page and figure which illustrate the particular word. The dissections of the Gramineae are good and useful, but examples of *Poa*, *Avena*, and *Agrostis*, etc., might well have been included.

Koorders, S. H. Exkursionsflora von Java. G. Fischer. Jena, 1923; 7 marks.

Larter, C. E. Some Features of Plant Distribution in Devon. in Journ. Torquay Hat. Hist. Soc. 1923. On p. 34 it is stated that *Cicendia* (*Microcala*) *filiformis* growing in the Farrington district is said by me in Hayward's *Bot. Pocket Book* 132, to grow in Guernsey only. This is not so. I state that *C. pusilla* (a different species) is known from Guernsey only. *Herniaria glabra* L. (Miss Carr Smith) in the Torquay district and *Arenaria tenuifolia* L. are claimed as New County Records.

Lewis, F. J., D.Sc. and Tuttle, Gwynethe M., M.Sc. On the Phenomena attending Seasonal Changes in the Organisation in Leaf-Cells of *Picea canadensis* (Mill) B.S.P. New Phytologist, December 1923.

Lindsay, Archdeacon T. S., B.D. Plant Names. Nature Lovers' Series. The Sheldon Press, London, 1923; 2/6. Botanical names are not popular with the young botanist but they are indispensable. Even with their variation and instability they are greatly in advance of any so-called popular names which have a higher degree of variability and an immensely greater degree of uncertainty. The possession of this portable and well-printed little work is strongly to be urged upon botanical beginners who dread the uncouthness of such names as *Deutzia* or *Helichrysum*. A perusal of this work will explain the reason for the use of certain names, their derivation, and much interesting material which hangs round them, and the reader will begin to realise that there is meaning and a plan which runs through such a deadly array of names as a *List of British Plants* contains. He will begin to distinguish those which are derived from the Greek (whence Botany sprung) and Latin, and he will begin to realise how significant such a name as *Erodium* becomes when its etymology is explained. A glance is given at plant history, beginning with Theophrastus and then carried on by Dioscorides and Pliny. The reader is told that our garden *Fuchsia* is named after the great herbalist, Leonard Fuchs, and that *Magnolia* commemorates Magnol. The author shows how in pre-Linnean days the name of a plant was a description of it. A tendency exists to-day to revive a lengthy nomenclature. The novice at Latin pronunciation will be comforted by the advice—" pronounce the names in any way you like, preferably in the customary way." Archdeacon Lindsay is frank enough to give a chapter on " Names whose meanings are not known." We are told that the Guelder Rose was originally the Elder Rose. The plant names which are derived from their Habitat, Use, Place of Origin, and many others are tersely discussed. There is a useful Index. The volume will give its user much food for thought. The price is very reasonable, and the work ought to have a ready sale.

LINNEAN SOCIETY, PROCEEDINGS OF THE. February 25, 1923. Canon G. R. Bullock-Webster exhibited a collection of thirty varieties of *Chara hispida*. He explained that in that genus varietal names are discarded as the variation is so great and so frequent that confusion would be the result were it attempted. March 15. Mr W. E. Hollows sent from Exmouth specimens of *Ranunculus Ficaria* with unusually bleached flowers. April 12. Dr Rendle describes the fruit of *Hippuris vulgaris*. The Linnean Gold Medal was awarded to Thomas Frederick Cheesman for his work on the New Zealand Flora. June 21. Mr T. A. Dymes describes the Seeds of the Marsh Orchids, a valuable contribution. June 7. The Geographical Distribution of some Transvaal Leguminosae, J.

Burtt-Davy. Nov. 15. The Flora of Solomon's Pool, Miss E. M. Blackwell. It contains *Chara connivens* and *C. contraria*. Near by is *Euphorbia allepica*. Nov. 29. The Onosmas of Linnaeus and Sibthorp, Mr C. C. Lacaita. On the Function of the Bladders in *Utricularia vulgaris* L., C. L. Withycombe.

LITTLE, J. E. Notes on Norfolk Plants, in Trans. Norf. and Norw. Nat. Soc. 374, 1922-3. The plants noted are chiefly for the district of Wells, and include *Sonchus arvensis*, var. *angustifolia* Meyer, *Juncus diffusus* Hoppe, *Potamogeton panormitanus* Biv. (this I recorded in *Rep. B.E.C.* 141, 1884, for the first time as British from Wolferton, the specimen being subsequently verified by Dr Hagström) and a var. of *Rumex Hydrolapatheum* with narrowed leaf bases.

MACKENZIE, J. S. F. WILD FLOWERS AND HOW TO NAME THEM AT A GLANCE WITHOUT BOTANY. Ninth edition. pp. 228. Holden & Hardingham, London, 1923; 2/-.

MACSELF, A. J. ALPINE PLANTS. pp. 205. Thornton Butterworth, London, 1923; 7/6.

MACWATT, JOHN, M.B. THE PRIMULAS OF EUROPE. pp. 208, tt. 8 coloured, 41 plain. Country Life, Ltd., Tavistock Street, London, W.C.2, 1923; 12/6. For many years the enterprising publishers of *Country Life* have gladdened thousands of readers by producing one of the most charming illustrated weekly publications in existence. It gives specially artistic views of the stately homes of England and its Isles, of Country pursuits, and most truthful representations of animal and plant life. In a distant century what a mine of information it will afford to the historic student who may perhaps gaze with astonishment at the artistic pictures of those beautiful dwelling-places of distinguished families when by the agencies of universal suffrage, by that time perhaps, extended to children out of arms, all gradations of class have been brought to the same dead level of a drab uniformity. Not only are we indebted to the publishers for this splendid publication, but from time to time for specially valuable hand-books treating of Gardens and things pertaining thereto, and, as in the above instance, for works pertaining to a special group. This, on the Primulas, is to be highly recommended since in its comparatively few pages much valuable information is compressed which enlightens not only the grower of these somewhat fastidious garden pets, but is of distinct value to the general botanist and gardener. The illustrations are good, and the photographic reproductions, due to the skill of Miss Cameron of Duns, are vivid and real. There is a useful bibliography of the Genus, and a description and Key of the 30 European species. We are sorry to see that *P. scotica* is not illustrated, but it is fully dealt with in a sub-specific sense. Under *P. elatior* it is stated that " it is a moot point with some whether the Oxlip (*P. elatior*) is a hybrid . . . or a natural species." In these days surely there are no botanists of the first order who do not consider it a true species. In its distribution throughout Europe it is by no means always associated with what have very erroneously supposed to be its parents—*veris* and *vulgaris*. *P. acaulis* (L.) Hill Veg. Syst. viii., 25, 1765 is used as the name of the Primrose instead of *P. vulgaris* Huds. Fl. Ang. 70, 1762. In so doing the oldest trivial is retained. Sibthorp's Olympian red-flowered Primrose (*P. rubra* S. & S.) appears as a variety, not as a species as it was originally described. Hoffmansegg re-named it *P. Sibthorpii*. Is the Eastern plant identical with our Western colour-form? *P. Sibthorpii*, says the author, is the original source of varieties in colour of the Primrose, or, in other words, is a parent of all our colour Primroses. The beautiful blue primrose was, we are told, raised by the late Mr G. F. Wilson of Oakwood, Wisley. The Polyanthus, generally supposed to be a hybrid of the Primrose and Cowslip, has a wide range of colour variations. The Cowslip is named *P. officinalis* L. Veg. Syst. 25, 1765. In the first edition of the *Species Plantarum* Linnaeus called it *P. veris*, var. *officinalis*. Here again the earliest trivial (as a variety) is retained, but in this case *P. veris* seems preferable as that is the earliest specific name. *P. anglica* Pax is a hybrid of the red-flowered Primrose, and the Cowslip " sometimes found wild—it is the most abundant garden Primula in cultivation." The beautiful albino form of *P. farinosa* was found by Mrs Saunders in the meadows of Wennington estate, Lancashire. It is said that the seeds of *farinosa* readily and quickly germinate within a week or two after sowing, provided this is done as soon as ripe. No notice is taken of the varieties described by Dr Heslop-Harrison. *P. scotica* is treated, as we have said, as a sub-species or variety of *farinosa*, but its distinctive characters are as great as those of *P. stricta*, which is accorded full specific rank. Physiologically *scotica* differs in the seed " taking a longer time to germinate—they generally lie dormant until the spring after they have been sown . . . and may even take two years." *Scotica*, too, has three flowering seasons from June to September. For these, among other reasons, the plant seems to demand specific, not varietal, rank. The descriptions and details of the remaining species, which are not native of England, are concise and adequately given, with notes on their history and methods of cultivation. Full justice is done to the charming section of Auricula, and welcome points in its long history are given. The author cites the earliest known figure from Mathiolus *Neues Kreuterbuch* of 1563, but the Auricula is also mentioned by Fuchs. Lobel, in the *Stirpium* of 1605, shows that purple, white, and rose-coloured plants were in cultivation, and Gerard in 1597 has six varieties. His figure of the type Auricula " is an exact copy of that of Mathiolus." The diseases and pests of the Primula are not forgotten, and hints are given as to their avoidance or destruction. The handbook deserves a large circulation, as it bears witness to personal knowledge of the subject, and to careful compilation. It is one of the best of its kind we have met with.

MARIE-VICTORIN, Frater. LES FILICINEES DU QUEBEC. Supp. Rev. Trim. Canad. ix., 1923, pp. 98. A Thesis for Doctor of Science at the University of Montreal. This is an excellent account of the Ferns of a very charming district. The book is well printed. It has short notes on the Physiographie, Phytogéographie, Ecologie, and Traitée systématique des espèces. The arrangement differs from that of Christensen in that it begins with *Osmunda*. The extra-Canadian distribution of the ferns is given. *Struthiopteris germanica* is put under the genus *Pteretis* of Rafinesque, which has priority over that of Willdenow. Some authors put it in *Onoclea*, which dates from 1753. It was first mentioned by Cordus in 1561. A novelty comes in in regard to the large genus which Adanson in 1763 named *Dryopteris*, which is adopted by Christensen in his

Index Filicum. Bro. Marie-Victorin uses instead *Thelypteris* of Schmidel Icon., ed., 2, 45, 1862, which is one year earlier than that of Adanson. As the genus contains about 1000 species considerable changes will take place if *Thelypteris* is chosen. *Dryopteris Thelypteris* is replaced by *Thelypteris palustris* Schott Gen. Fil 10, 1810. Why not choose *Thelypteris Thelypteris*? The original trivial should be maintained even at the cost of risibility. Nieuwland has made most of the new combinations. See *Amer. Midl. Nat*, i., 226, 1910. The Bracken is put under *Pteridium*, the Canadian analogue being *P. latiusculum.* There are 12 species of *Botrychium* in the area. A good bibliography and index are also supplied. The Doctorate seems well deserved.

MATTHEWS, J. R. The Distribution of certain Portions of the British Flora. Plants restricted to England and Wales. Annals of Botany 277-298, 1923. In this excellent and thoughtful paper Mr Matthews, by the aid of some well designed maps, has dealt very ably with the history and causes of recent plant distribution that is recent in a geologic sense. A brief survey of the divergent views held regarding the origin of the British flora is given. The source and distribution of 266 species which are restricted to England and Wales are then considered. A map illustrates the range of these species. The general conclusion is reached that this limited portion of our flora has been derived mainly by advance through France in post-glacial times. A detailed analysis shows that nearly 50 per cent. of the group is of great rarity. Excluding some 30 species which are boreal or western outliers (some as relics of a former arctic flora, others, possibly, as recent introductions) this rare element is centred along a coastal belt from Cornwall to Norfolk. Certain areas of concentration are found to exist indicating, it is believed, points of arrival and establishment rather than areas of retirement. These features provide a clue to invasions, and details are given for four small assemblages which may be regarded as having followed different migratory paths. An invasion from the east and another from the south are distinguished, and between these two lines the main portion of the English flora has probably advanced. In addition to the cartographic studies presented, the results are expressed in terms of Willis's " Age and

Area " theory of distribution. It is shown that " by trying to discover disturbing factors and allowing for these, the results obtained are consistent with this hypothesis in its broad outlines, although on a first analysis the theory may not appear to be particularly applicable. When one thinks of aquatics and their introduction by wildfowl one cannot help doubting any conclusions that may be arrived at. A long period of time to account for plant-introduction in many cases is not demanded. Doubtless since steam and electricity have come in to quicken journeys the pace of plant introduction has been immensely quickened. We have seen in less than a century *Veronica Tournefortii* and *Matricaria suaveolens* spread into every county. *Crepis taraxacifolia*, *Senecio squalidus*, *Epilobium angustifolium*, *Sisymbrium altissimum* are also widely spread across Britain, the *Epilobium* having also a northern range, while *Juncus tenuis* has a more discontinuous distribution. The occurrence of *Prunella laciniata*, *Galium sylvestre* in its southern form, *Salvia pratensis* and *Orchis hircina* are due perhaps to several causes not remotely connected with man and his operations. *Hydrilla* and *Tillaea aquatica* are two recent discoveries. The former must be owing to water-fowl, the latter possibly so. Until we possess a much more complete knowledge of the flora of our natural sheets of water it will be unwise to draw conclusions from the insufficient details we now possess.

MOLL, Dr J. W. and JANSSONIUS, Dr H. H. BOTANICAL PEN PORTRAITS. pp. viii., 472, tt. iii, royal 8vo. Martinus Nijhoff, The Hague, 1923; 30 guilders or 12 dollars. This important contribution to our knowledge of the structure of 100 medicinal plants or such parts of them as are used in medicine is written in English. The following is the definition of the title which at first sight suggests portraits of botanists. " They are produced by an improved mode of description, that may be called the ' Portraying method.' It is based upon the Linnean method of description, well known in Phytography. The Linnean method shows three prominent characters, viz. a strict order in the arrangement of the facts described, the use of well defined technical terms and a kind of telegram style. In Micrography two additional principles are wanted. The descriptions of sections in various directions must be combined into a ' perspective description ' reproducing the tissues as bodies with three dimensions. In the second place the division of Anatomy into Cytology, Histology and Microscopical Anatomy must be emphasised. The Portraying method brings into the descriptions the knowledge of ' habit,' generally considered of the utmost importance but at the same time intuitive and unsuitable for reproduction. It is an extension of the Linnean method, but the use of terminology is more restricted in order to give fuller scope to the natural powers of observation of the investigator. Thus a Pen Portrait may reach the utmost completeness allowed by the present state of science, a factor of the most vital importance in the description of living organisms. This method will restrict the use of illustrations within narrower bounds. The application of the method of Pen Portraits on a more extensive scale has hitherto been limited to the micrography of woods and, in the 4th edition of the *Pharmacopoea Neerlandica*, to the description of drugs and their powders. In both cases it is proved to be a powerful scientific instrument. But it is fit for a far wider application and this book tries to pave the way in that direction. To make a good Pen Portrait is not an easy task, least of all in Micrography. Therefore 100 Pen Portraits are offered to serve as examples for the description of all the several parts of the higher plants. They will materially help botanists wishing to use this method, who will find moreover in the preface a somewhat detailed exposition of the principal features of the portraying method, whilst ' guiding schemes ' have been added, which proved necessary for the construction of descriptions of this kind. At the end of the book an elaborate glossary is added in which the exact meaning of all anatomical terms may be found." The object of the work is to give somewhat elaborate descriptions of the microscopic characters of a certain number of vegetable drugs. Macroscopic characters, it may be mentioned, are also added. Just as a systematic description of plants should be made in a uniform, and in as terse and distinctive a manner as possible, so too should the descriptions of the microscopic character be guided by definite rules. Therefore, to make this quite clear, no less than twenty pages are devoted to the "Guiding Schemes." Such schemes, as the authors say, "are bad masters but good servants. They will show you a safe and easy way through the trodden paths of science, leaving your mind free to make new and original observations." Great praise is given to Linnaeus for his introduction of organographical terminology, especially as developed in his *Philosophia Botanica* (misprinted *Botonica*). The advantages and disadvantages of terminology are obvious. Terminology allows us to express many things by a single word but the curse of modern science is the excessive multiplication of the terms so that, as has been said, systematists are strangled by their terminology. But no morphologist, ecologist, or physiologist is able to cast the first stone. The special disadvantage urged by the authors is that it necessarily introduces a certain abstraction and generalisation leading to the inverse of the knowledge of "habit," which is justly considered to be highly important. They show how the drawback may be avoided. The Linnean descriptions, they say, are characterised by a peculiar style, that is, a sentence is allowed for every part of the plant—calyx, corolla, stamens, etc. Verbs are rigorously avoided and thus a "telegram" style was originated containing no superfluous word. The advantages of this style are its brevity and automatic order. Its brevity makes the description more digestible, avoids unnecessary repetitions, gives a maximum of information in a minimum of words, and any part or parts of it may be consulted. This method applied to the structure of vegetable drugs is what Pen Portraits mean. It is most important to the student of pharmacognosy and he who wishes to take a prominent part in such work must be prepared to carry out this line of work. In toxicology, so far as poisoning from crude drugs is concerned, this method is essential. To such workers Pen Portraits must be an imperative need. The methods of examination are described and the reagents necessary for investigation are detailed. A good glossary is supplied, and also a copious bibliography. One is glad to see that while advocating and elaborating minute histological work, the authors by no means sneer at "habit" or "rule of thumb" or more correctly the work of the acute macroscopic observer. The weakness of the latter lies in the fact that it is merely a personal possession, that it cannot be handed on from one to another as can a carefully written description. The authors tell us that Auguste Pyrame De Candolle possessed a gift of knowing by the "habit" alone the various seedlings which were to be planted out in the Botanical Garden at Geneva. It was a surprise to a visitor to Rothamsted to see a lad name at once a portion of a leaf or stem from a quantity of cut hay. This knowledge when fully developed is a wonderful possession for the field botanist. A patch of colour on a hill, a tuft by the roadside, a waving band of green in the stream are recognised long before any detail can be seen. When I was examining in Materia Medica in London, some years ago, the candidates were shown only the dried and shrivelled leaves of various drugs. *Conium* in this state was frequently unrecognised. One day, however, a candidate who had looked at it with a magnifier at once identified it. I asked him how he knew it. He told me the apices of each leaflet or leaf-division had a minute whitish mucro and in that way it differed from any other British plant at all resembling it and he was found to be correct. He had seized upon an important diagnostic character which the examiner himself had not considered to be peculiar to *Conium*. The authors acknowledge that a certain number of characters will defy all attempts at analysis and record, so a certain scope for " habit " will remain. But it will diminish as science proceeds. The importance of drawings is not overlooked. " They can give very interesting and even essential characters which cannot appear in a description " although descriptions may attain " the highest possible degree of completeness compatible with the present state of science." The figures of Dodonaeus and Fuchs are said by the authors to be " vastly superior to any product of the present age." Surely the draughtsmen of the plates in the Herbals of Fuchs (why was not that of Brunsfels mentioned) and Dodonaeus cannot be said to be more accurate or more artistic than those of Bauer of two centuries later, however much their statement may be true of the present age limners. They rightly hold that plant descriptions on the contrary improve and tend to improve. How good they can be made is amply illustrated in the pages of " Pen Portraits."

MURBECK, S. Contr. à la Connaissance de la Flora du Maroc. Pteridophyta-Leguminosae. Geraniaceae-Composées. Lunds Univ. Arssk. 76, 1922 and 1-68, 1923.

MURR, Prof. Dr JOSEF. NEUE UEBERSICHT UBER DIE FARN- UND BLUMENPFLANZEN VON VORALBERG UND LIECHTENSTEIN. 1 Heft, pp. 144, & 2 Heft, pp. 288, 1923. Our valued critical expert on the Chenopods has, under great difficulties, produced two parts of the above Flora which treat of the Filices to the Scrophulariaceae, the work being arranged according to Engler's system. Ten pages are devoted to the names of those from whom help in one way or another has been obtained or are cited as authorities. Christensen's arrangement and terminology of the Ferns has not been followed and *Nephrodium*, which includes *Phegopteris*, still does duty for *Dryopteris*, and *Scolopendrium* for *Phyllitis*. A locality for the very rare hybrid fern, *Dryopteris remota*, is given—Spondawald bei Frastanz. Not only native species but adventives and planted shrubs and trees are included in the Flora. A very good photograph of *Deutzia gracilis* exhibiting a seasonal dimorphism is given. The Canadian Water Thyme is given as *Helodea*—surely a mischievous alteration especially as it is without the synonym *Elodea*. *Vulpia dertonensis* is given for *Festuca bromides*, and our *Avena pubescens* masquerades as *Avenastrum pubescens* Huds., a name certainly never used by Hudson. *Juncus tenuis* is spreading through the area as it is elsewhere on the continent. One wonders how many British botanists would recognise *Bulboschoenus maritimus* for *Scirpus maritimus* and what advantage is gained by splitting up the Linnean genus *Scirpus* into 7 or 8 genera. Of the Palmate Orchids *O. incarnata* and var. *ochroleuca*, *O. traunsteineri*, *O. latifolia* from the Matlerjoch at 1,800 metres, *O. cordigera*, *O. sambucina* and *O. maculata* are given. The invalid genus name, *Epipactis* Adans., is retained and *E. sessilifolia* is used for the earlier *Helleborine purpurata*. A good critical account of the Salices is given which includes 5 new hybrids. Our Japanese *Polygonum cuspidatum* is changed to *Pleoropterus cuspidatus* H. Gross. The Chenopods, as one might expect, are very thoroughly treated and three pages are devoted to the phylogenesis of the genus, with a plate illustrating the leaves of several species and hybrids, including the newly described *C. Drucei*, a hybrid of *album* × *Berlandieri* and *striatum*. *Minuartia* is used instead of *Arenaria* or rather *Alsine*. *Silene vulgaris* Garcke is used in the sense of *S. inflata* with vars. *rubra* Ram., *brachiata* Garcke and *latifolia* (Mill.).

Our Water-cress appears as *Cardaminum Nasturtium* Moench. A hybrid, which ought to be found in Britain, of *Cardamine hirsuta* and *sylvatica* has the elegant name of *C. Zahlbruckneriana* O. E. Schulz. Wallflower is disguised under the name *Erysimum cheiri* Cr. Can there be any scientific advantage in thus varying the name? Among the Potentillas Dr Murr names two or three new hybrids—one, *P. Beckii*, is probably British. He claims *P. Crantzii* and *Tabernaemontani*, both British species, for its parents, *i.e. P. Crantzii* × *verna*. Under *Crataegus*, *C. macrocarpa* Heg. & Heer is said to be a hybrid of *monogyna* and *oxyacanthoides*. A variety of *Geranium Robertianum* is described as " var. *villosulum* Murr, caulibus, superiore foliorum parte, calycibus villosis " from Tosters which must be near to our *hispidum*. The hybrid *G. Oenense* J. Murr (*molle* × *pusillum*) should be looked for in Britain, as also *G. Stokeri* which is *superpusillum* × *molle*. A hybrid of *Pimpinella major* and *Saxifraga* is mentioned which also should be borne in mind. *Arctous alpina* is put in a separate genus from *Arctostaphylos Uva-ursi* Spreng. Under *Lappula echinata* Gilib., Dr Murr describes a " var. *mollita*, tota planta molliter pubescens, inflorescentia compactior," which occurs in Britain. Several good plates of plant photographs are given including one of his *Calamintha Degenii* and his var. *Elizabethae* of *Campanula Trachelium*. We shall warmly welcome the concluding parts of this suggestive and useful *Flora*.

NATURE. Weekly, price 1/-. Editor, Sir R. Gregory. Publishers, Macmillan & Co., St Martin's St., London, W.C.2.

NEMEC, Prof. Dr B. Studies from the Plant Physiological Laboratory of Charles University, Prague, 1923. The Constancy of the Living Substance by W. Lepeschin. Selektions und Kreuzungs-Experimente mit albomakulaten (weisbunten) Mimulus Rassen, Dr Artur Brozek.

NEW AND NOTEWORTHY ORCHIDS. Oakes Ann., Boston. pp. 99, 1923.

ORCHID REVIEW, 1923. Edited by Gurney Wilson, F.L.S.

Ostenfeld, Prof. C. H. Critical Notes on the Taxonomy and Nomenclature of some Flowering Plants from Northern Greenland, tt. 3, fig. 4, lxiv., København, 1923. *Deschampsia arctica* (Trin.) Ost., *D. pumila* (Ledeb.) Ost., *Potentilla Petersenii* (Rydb.) Ost. and *Melandryum pauciflorum* (Ledeb.) Ost. are new combinations. Our *Arenaria rubella* is put as *Minuartia rubella* Graebn. *Braya Thorild-Wulffi* Ost. is a new species appropriately named after the explorer who lost his life there. Flowering Plants and Ferns from Wolstenholme Sound (76 deg. 30 N. lat.) and Two Plant Lists from Inglefield Gulf and Inglefield Land, N.W. Greenland. København, 1923. Ostenfeld enumerates the different sources from which these Lists are gathered. As the result 95 species are now enumerated. The number for the whole of N.W. Greenland is estimated at 115. Among the additions are *Saxifraga Hirculus*, var. *propinqua* Simm. and a hairy variety of the true *Dryas octopetala*, var. *argentea* A. Blytt. The Second Thule Expedition was for the investigation of the north coast of Greenland in 1917. One of the noteworthy plants obtained was *Mertensia* or *Pneumaria maritima*. Dr Wulff obtained from Agassiz Land 44 species, which include *Dryopteris fragrans*, *Woodsia glabella*, *Hierochloe alpina*, *Poa arctica*, *Trisetum spicatum*, *Hesperis Pallasii*, and *Saxifraga cernua*, a foot high. Six species were also obtained by Capt. G. Hansen from the third Thule Expedition at Cape Leipner, 78 deg. 44 N. lat. The Vegetation of the North Coast of Greenland based upon the late Dr Th. Wulff's Collections and Observations, Second Thule Exped. Gronland Nordkynt. 1916-8, n. 9, København, 1923. Dr Wulff was a trained botanist who had previously visited Spitzbergen in 1899. At one time he visited the Isle of Wight and made some observations on the dwarf plants of the downs. Like so many of these arctic journeys, the Thule expedition had a series of misfortunes to meet with. As Ostenfeld says, the members had to fight for their bare existence, and hunger and misfortune were their daily guests. When they had traversed the big ice-cap and descended south of the Humboldt glacier near Cape Agassiz on the 24th August 1917 they were weakened by hunger and exhausted by their efforts. Dr Wulff was very ill, and could hardly walk, yet, though unable to collect, made notes or dictated them to his friends. A few days later he laid himself down and let the others proceed so as to save themselves. The last words in his diary are sadly pathetic. " Straining walk until 29 Aug. 12.30 a.m. without finding any game. I am half dead, but found *Woodsia*. Retired to rest at 7 p.m. and I will not be a hindrance to the movements of my companions on which their rescue depends." Wulff's photographs were all lost, and his body lies in the bitter north where so much of his work had been done. Up to his visit only ten species were known from North Greenland. His collection contains 70 species, and Ostenfeld thinks further exploration will not add materially to the List. The plants were gathered from 81.25 deg. to 83.6 deg. N. Lat. The species are mostly circumpolar, being, in fact, arctic species of a very wide range. A few, *Melandrium triflorum*, *Taraxacum arctogenum*, and *Braya Thorild-Wulffii* have not been found outside Greenland, 7 are exclusively Arctic-American species, 4 are Arctic-American which also have reached Arctic-Eurasia, while *Draba Adamsii* and *Taraxacum arcticum* are Arctic-Eurasian species which have reached their westward limits in Greenland. Four species of *Taraxacum* were found, a variety of *Erigeron uniflorus*, and an extraordinary form of *Minuartia Rossii* which is figured. It may be mentioned that all the 70 species are perennial, and are low growing herbs or very small shrubs with but little power of vegetative reproduction. The stem of *Salix arctica*, probably fifty years old, does not reach half an inch in diameter. The period of hibernation, in which little development of the plant takes place, lasts between 9 and 10 months of the year, but the buds hibernate in a very advanced state so that when the short summer comes they are enabled to grow very quickly, and they flower very shortly after their long winter sleep. *Saxifraga oppositifolia* is the earliest plant to flower. Since there are so few insects the plants, in the majority of cases, must be either self-pollinated or wind-fertilized. Dr Ostenfeld, as is customary in his papers, makes many pregnant suggestions, and he has also prepared some excellent illustrations not only of the plants but of the country in which they grow.

PETCH, T., B.A., B.Sc. THE DISEASES OF THE TEA-BUSH. pp. 220. tt. 3 coloured, 69 plain. Macmillan & Co., 1923; 20/-. Considering that the British Empire has over a million acres in India and Ceylon under tea-culture, the necessity for an authoritative manual on the diseases which affect the Tea-Bush is at once apparent. In 1903 Watt and Mann enumerated about a dozen diseases, but they recognised that diseases were not only increasing in number but in virulence every season. This is the curse of culture. Whenever large quantities of plants or animals are grown together in more or less artificial conditions disease is sure to come. Ceylon has afforded a terrible instance in the Coffee disease (*Hemileia vastatrix*) which destroyed that important product in that beautiful isle, as another disease led to the practical extermination of the Orange culture in San Miguel and, until M. Pasteur's classic experiment, the silk-culture in France. In Mr Petch's manual 60 diseases have been differentiated. Tea is grown under favourable conditions of light and air with not excessive humidity, and with systematic root-feeding by manure. The periodic pruning is all to the good, for in doing this an opportunity arises of getting rid of various diseases. The tea-bush, moreover, is a hardy plant, but opinion seems to tend towards the belief that, as is natural, the older plants are more subject to disease than the young bushes. In order to make the work more intelligible to the layman a preliminary chapter treats of the classification of Fungi. Necessarily from the fact that the important part of the tea-plant to the grower is the leaf, any disease attacking it is more likely to attract attention. Except for the Blister-blight of Northern India, at present the leaf-diseases are not of a sufficiently serious character to arouse general alarm. The methods for the control of such diseases are—(1) Plucking and burning diseased leaves, (2) manuring and general cultivation, (3) spraying. In one case, on an estate, over 40,000 pounds of diseased leaves were collected in a single year and burnt. The collectors were special coolies. Spraying with Bordeaux mixture is rather objected to by some since it is thought that traces of copper in the tea might prejudice its sale, but careful experiments show that any fear of such contamination is groundless as eight teaspoonfuls of tea, enough for eight breakfast cups, obtained from sprayed bushes, contained only .0002 grams of copper, an inappreciable amount. In pruned tea there would, of course, be no copper present in the succeeding leaves. The various diseases are carefully described and illustrated by useful and excellent figures.

The diseases of the stems are also thoroughly described, as are those attacking the roots. Curiously several diseases are due to the decayed stumps of shade-trees. Just as Cocoa in the West Indies must have a partial shade given it—one of the most beautiful effects of colour in the world is that given by the Central American Bois Immortelle with its reddish flowers—so in Ceylon the graceful Australian *Grevillea robusta* is used to protect the tea from the too vigorous rays of a tropical sun. Therefore when a *Grevillea* is to be got rid of the stump should not be allowed to rot in the ground. Worse even than *Grevillea* is the *Albizzia moluccana* which Mr Petch suggests should not be used at all. In Chapter vii. some most valuable Mycological notes are given. There is an adequate Bibliography. Mr Petch is to be warmly congratulated upon the preparation of such a standard work.

PFEIFFER, N. E. MONOGRAPH OF THE ISOETACEAE. pp. 79-232, tt. 8. Missouri Botanical Garden, 1922; 1 dollar. This excellent Monograph gives the history of the genus. The name was first employed by Linnaeus in the *Skansa Resa* of 1751 and definitely established in the *Species Plantarum* of 1753 with *I. lacustris* as the species. Milde in 1867 raised the number of species to 15, while Baker in his *Fern Allies* increased the number to 46. Underwood in *Our Native Ferns and Fern Allies* first used Isoetaceae as the name for the Family. Dillenius was the first to publish the vernacular name of Merllyn's Grass in his *Historia Muscorum* of 1741. The author discusses other vernacular names, the economic uses, general morphology and ecological relations of the genus and he supplies keys to the 63 species which he describes. He places our Guernsey plant, which comes from Lancresse (not Laucresse) Common, as the form *subinermis* Dur. which is synonymous with the var. *scutellata* A. Br., 1883. No mention is made of the solitary specimen which was found at the Lizard, Cornwall, by Mr F. Robinson. See *Rep. B.E.C.* 693, 1919. For *I. echinospora* Dur. only one British locality is given, and that from Gay's Herb., ex Llyn "Padark" by which Padarn is meant, but it occurs also in Wales and Ireland. Under *I. lacustris* no Irish localities are given, and Cwm y Glo is misspelled "Crom y glo." No varieties are included not even that which was described as a species in *Journ. Bot* as *I. Moorei* by D. Moore. The book is well printed, and must prove useful to every student of the group.

Prain, Sir David. Gilbert White as a Botanist. A paper read at a meeting of the Gilbert White Fellowship on 7th April 1923. In his usual charming manner Sir David Prain deals with the subject. He tells us that in 1768 Gilbert White sent Pennant a list of Selborne birds using the scientific names employed by Linnaeus, but when in 1769 he sent various lists to Mr Harrington the scientific names supplied were those employed by Ray. The reason has been suggested by Dr Drewitt. In his charming story of the Chelsea Physic Garden, he tells us how the young Linnaeus had heard of the place, and how in 1736 he decided to visit England to see it. Linnaeus had just evolved a new system of classification, more workable than any method which had preceded it. But he came to England too soon. English botanists, worthy men all, were not ready to receive the new teaching. Linnaeus, says Dr Drewitt, " came to London with a cordial letter of introduction to Sir Hans Sloane from Dr Boerhaave." The letter stated that Sir Hans Sloane was the only man worthy of an introduction to Linnaeus, and Linnaeus the only man worthy of an introduction to Sir Hans, a statement as stilted as untrustworthy, since in Dillenius there was a man not unworthy to be classed with either. As Sir David says, the pretty speech fell flat—Sir Hans was bored by Linnaeus. Perhaps he tried that most efficient way of boring by trying to tell all he knew. Linnaeus then went on to Chelsea and saw Miller, who received the revolutionary Swedish botanist in the same way and thought him ignorant, especially of Botany. Miller was a Tournefortian, and naturally resented the changes made by the Swedish botanist. As will be remembered, he also came to Oxford, where after a preliminary passage at arms Linnaeus so impressed Dillenius that he offered to share his stipend with Linnaeus if he took up his residence at Oxford. Sir David has done the best he can to show Gilbert White as a botanist, but it must be admitted that, careful observer as he was, he made no substantial addition to our knowledge of British botany.

Preslia. The Report of the Czechslovak Botanical Society of Prague, 1922, published in 1923, pp. 156, has a portrait of Dr

Bohumil Nemec, President, with a short biography and a chronological list of his publications since 1895. Dr A. Brozek contributes an able genetical paper on a " Summary Report in a case of Cumulative Factors in the Inheritance of the Spots of the Flowers in the Hybrids of *Mimulus tigrinus-luteus* × *M. quinquevulnerus-rubinus*." Dr Domin describes a new Australian genus of the Leguminosae as *Nemicia* named after the President of the Society. Under it are put *N. atropurpurea* Domin, comb. nov. (the old *Oxylobium atropurpureum* Turcz.), and eleven other species of which *N. luteifolia*, *N. vestita* and *N. Dorrienii* are new species from Western Australia. Dr Dostal contributes a paper treating of the production of tubers in *Ranunculus Ficaria* and the accompanying diminution of seed-production. Dr J. Klika contributes a paper on the peloria of *Lamium maculatum*. Frant A. Novak gives an account of " The Limestone Districts in the Little Carpathian Mountains; their Significance in the Phytogeographical Uniformity of this Range." Descriptions of the new plants are given. These include *Hieracium Nemeci* and, from waysides in Bratislava, *Stellaria media*, nov. var. *glutinosa*. J. Rohlena gives additions to the Flora of Dalmatia, and Dr J. Vilhelm describes Hybridism in the Grimmiaceae.

RIDLEY, H. N., F.R.S. THE FLORA OF THE MALAY PENINSULA. vol. ii. Gamopetalae. pp. vi., 672, 1923. L. Reeve & Co., London; 42/-.

RILEY, L. A. M. Contributions to a Flora of Sinaloa, in Kew Bulletin, pp. 103, 163, and 333, 1923. There are several new species described. Sinaloa is situated on the Pacific littoral of Northern Mexico.

ROBINSON, E. KAY. NATURE LESSONS WITH PLANTS. pp. 136. Holden & Hardingham, London, 1923; 2/-.

ROBSON, FORSTER. OUR WAYSIDE TREES AND HOW TO KNOW THEM. pp. 125. Thornton Butterworth, London, 1923; 4/-. BRITISH TREES AND HOW TO NAME THEM AT A GLANCE WITHOUT BOTANY. pp. 148. Holden & Hardingham, London, 1923; 2/-.

ROHLENA, JOSEF. Plantae Montenegrinae Novae vel Rariores. Vestnik, p. 70, Prague, 1923.

SAMPSON, H. C. THE COCONUT PALM: THE SCIENCE AND PRACTICE OF COCONUT CULTIVATION. pp. xv., 262, tt. 40. J. Bale, Son & Danielsson, London, 1923; 31/6.

ST. JOHN, HAROLD. A Botanical Exploration of the North Shore of the Gulf of St Lawrence in 1915. Canadian Dept. of Mines, memoir 126. 622 species were noted.

SANTOS, JOSE K., Ph.D. Differentiation among Chromosomes in *Elodea*, in Botanical Gazette, vol. 75, 42, 1923.

SARGENT, CHARLES SPRAGUE. MANUAL OF THE TREES OF NORTH AMERICA (EXCLUSIVE OF MEXICO). pp. 910, with 783 illustrations from drawings by Charles Edward Faxon and Mary W. Gill. Second Edition. Constable & Co., London. Preface dated December 1921; 45/-. One cannot resist quoting in full from the cover—" This new edition of the *Manual* contains the results of forty-four years of continued study of North American Trees carried on in every part of the United States and many foreign countries. As the standard work in its field, it should have a place not only in public and college libraries, but in the private libraries of all who are interested in the subject, while the extent and importance of the revisions it has now undergone will, we believe, make this new issue indispensable to every owner of the original edition." It is one of the pleasantest books we have seen for some time, plainly bound, nice paper, excellently printed, copiously and beautifully illustrated, and full of a wealth of descriptive matter which is well arranged and most clearly written, every page speaking for the intimate acquaintance which the author has of the trees he writes about. Would there were more of such manuals. Directly it was received came an opportunity of testing it. An *Amelanchier* had been sent from Hampshire. Critics had suggested two different names for it. Sargent quite definitely showed that both were wrong. It is *A. laevis* which has been confused with *A. canadensis* L. The descriptions are terse and to the point. One is not distracted by irrelevant matter or repeated characters which are common to other members of the group. In fact, they are written by a man who knows what to say and how to say it. In this comparatively small and handy volume 717 species of trees are described belonging to 185 genera. It is illustrated by 783 figures, of which 141 are additional to those given in the first edition. It is arranged in the order of Engler's *Pflanzenreich*, and the book is so good that even this is pardoned. There is an analytical key to the genera given which is based on characters derived from the leaves, an obvious advantage since these are available for the greater part of the year, whereas fruit or flowers might be out of season or out of reach. The American Hawthorns, which are to trees what the Asters and British Hawkweeds are to herbaceous plants, number no fewer than 137. Of English youth it was said that their aspirations were expressed by uttering, " it is a fine day, let us go out and kill something." The saying was paraphrased in connection with Sargent—" It is a good day for a walk, let us go out and find a new *Crataegus*.' Usually he did, and he shows us how to distinguish it. One ought also to say that the distribution of each species is very fully given, the height of the tree also added, sometimes even the thickness of the bark when that is a differentiating character. The vernacular names and the derivations of the scientific names are also supplied. There is a capital index and one index only, a good glossary, and a useful map. We notice that the synonyms given are not numerous. The authority cited is occasionally at variance with the *Kew Index*, and apparently not always the oldest name employed. For instance *Ulmus fulva* is used but the earlier *U. pubescens* Walt. is not given even in synonymy. There are 54 speces of *Quercus*, but the authority for *Q. coccinea* and *Q. palustris* is given as " Meunch," the *Index Kewensis* gives Wang. and Du Roi respectively. Both are earlier than Moench if that is the author meant. But these are trivial matters. It has been a real joy to go through the book, and when we remember the magnificent *Sylva* from the same pen, one feels it is a privilege to offer personally the warmest tribute to this really great systematist, and to thank him for this latest evidence of his great knowledge and powers.

SAYCE, Rev. Canon A. M., D.Lit., LL.D., D.D. REMINISCENCES. pp. 485. Macmillan & Co., London, 1923: 18/-. Although immediately outside our range of study, few of our members will resent a short notice of Canon Sayce's charming book, with its delightful reminders of energetic work, of exciting incidents of travel, of personal friendships, of successful explorations, of multitudes of witty anecdotes, and the hundred and one things which are so pleasantly told by a man who knows how to get at the heart of things, and, because he has given of his best to others, has received an unstinted meed of kindness from all sorts and conditions of men. Like Sir Hans Sloane, who lived to be a nonagenarian, Dr Sayce came into the world a delicate child, as he says, " a child with a cough," which developed into pulmonary mischief, and he was often pointed at as one who was not long for this world. He was so delicate that ordinary school work was beyond him. Sloane, too, it will be remembered, developed tuberculosis, had violent haemorrhage, yet, after a delicate life, died of something else than lung mischief when he was over ninety. Dr Sayce has all his long life been something of a creaking door. Yet although typhoid, practical loss of sight, jaundice, pneumonia, asp-bite in which he had the courage to apply the hot cautery himself, and broken limbs have in turn come to him they have left him well nigh unscathed. His Celtic temperament accounts for some of his charm of manner, and makes him a general favourite. Although he does not admit it, there is a remnant of Calvinism in his nature since he almost accepts the doctrine of predestination which he has turned to advantage in crucial times in his career. His ancestors were from Glamorganshire, but one of them came from Conway with a pedigree, tracing descent from Constantine and Julius Caesar. He tells us that the early Victorian age was almost as fatal to works of art preserved in the country houses of England as it was to the village churches, or as the sack of the Summer Palace at Peking by the British and French Barbarians was to the works of art in the Far East. He may well say so, for when I was there in 1907 the path leading by the palace was still, to a great part, made up of fragments of priceless oriental china which had been ruthlessly smashed by the marauders. He remembers ancient pieces of Dresden china being kept in the nursery at his relatives. I, too, remember at one of the stately homes of England seeing two priceless Dresden figures being actually ridden on by the children, yet they had escaped injury. He narrates a story by an eye-witness of the death of the Duke of Clarence who when he was drowning in the butt of Malmsey came once to the surface and, as he did so, gasped out " What rogues these wine merchants are! " and then sank for ever. He tells us that Max Muller once said to him at the commencement of his career, " Remember that if you want to make discoveries you must be content to make mistakes " —a very good piece of advice for the young botanist, to which may be added the comment made by Linnaeus, " every one makes mistakes, happiest is he who makes the fewest." To this may be added, " he who never makes a mistake never makes anything." He tells us that Canon Tristram, the botanist, was one day lunching with Routh, the aged President of Magdalen College, when Routh told him that he was present at the Coronation of the last King of Poland. As joining up the link with the past or rather in adding another link, one may say that Mrs Fleming, the grand-daughter of Canon Tristram, was one of the party who gathered *Carex microglochin* last August in Glen Lyon. Routh used to say that he had spoken to a lady whose grandmother had played with the children of Charles the First when they were at Oxford. I once told this link to the Empress Eugénie when she capped it by saying that she had a lady-in-waiting whose grandfather was a page to Louis the Fourteenth, and although I felt I was treading on thin ice I ventured to tell her that once in Spain in the early eighties I had spoken to an aged goatherd who had as a boy heard the guns at the battle of Trafalgar. Dr Sayce gives a personal example of a link with the past. His father was born in 1804, and at the age of seventeen attended the funeral of his grandmother who was born in 1739. Her husband was taken to see Lord Lovat, who was born in 1660, when a prisoner in the Tower. Green, the historian, was a Magdalen School boy, and once had a prize given him by Dr Routh, who said to him, " Shake hands with me." Green did so; then he said, " Boy, remember you have shaken hands with a man who has seen Dr Johnson." This led Green to read about the great Lexicographer and his contemporaries, and the result was the *Short History of the English People*. When Sayce was in Palestine he found *Papyrus* growing in a marsh bounded on the north by the Nahr Falaik. One cannot give anything like a detailed list of his journeys. He has travelled over a great part of the globe, and has made excavations in Egypt, Syria, etc. One may say of him, as of Palgrave, " Ulysses, many travelled man." In this charming volume he has, what is often missing from books of travel, made the pages redolent of wit and humour, and if, as I have been told, he never kept a diary, then his memory must be of the highest order. We used to meet frequently in past days at a niece of Tennyson's, when one found his conversation not less vivacious than the " Reminiscences " which will charm its many readers.

SCHAFFNER, J. H. How to Distinguish the North American Species of *Equisetum*, in Amer. Fern Journ. 33-40, 1923.

SCHINZ, Prof. Dr HANS, & KELLER, Prof. Dr ROBERT. FLORA DER SCHWEIZ. I Teil. Excursionsflora. pp. xxxvi., 792, 1923. This, the fourth edition of a most popular and useful Swiss Flora, is a model of accuracy and portability. There are 2587 numbered species but this gives an inadequate idea of the number described because many plants which we are accustomed to see treated as species are sunk to the grade of unnumbered sub-species. For instance, all the Taraxaca are grouped under one numbered species, the Hieracia are reduced to 34 species, *Pilosella* and *Peleterianum* being kept separately, and only 63 Rubi are numbered. There is a very complete and correct Index. The species are arranged according to Engler's System of which Dr Schinz is a great supporter. One ought to say that the numerous varieties and introduced plants are dealt with in a separate volume. In our *Report* for 1919, p. 599, the excellent *Svensk Fanerogamflora* of Prof. C. Lindman was reviewed and there it was stated that those who expected, if the *Vienna Actes* were strictly followed, the Botanical Millenium would soon arrive, would be somewhat disappointed when they tried to identify as British plants *Cuviera europaea*, *Zerna sterilis*, *Aronicum paludosum*, *Naumburgia thyrsiflora*, etc. A comparison of the names used for the same species in the Swedish and the Swiss Floras and Dr Murr's *Flora of Voralberg and Liechtenstein* gives one much food for thought as showing what divergences, not only in names, but in sequence of species, arise even if the same System and the same Rules are followed. Space will only allow of a very few of these name-divergences to be noticed. It may be stated that Lindman does not include the Ferns and Vascular Cryptogams in his Flora. The initials (L) refer to Lindman's Flora, (M) to Murr's Flora, and (S) to Schinz and Keller's Flora.

Eupteris aquilina Newm. (S) = *Pteridium aquilinum* Kuhn (M).

Phyllitis Scolopendrium Newm. (S) = *Scolopendrium vulgare* Sm. (M).

Dryopteris Villarsii (Bel.) Woynar (S) = *Nephrodium Villarsii* Beck (M).

D. austriaca (Jacq.) Woynar (S) = *Nephrodium spinulosum* Strempel (M).

D., sub-sp. *dilatata* (Hoffm.) S. & T. (S) = *N. austriacum* (Jacq.) Fritsch (M).

D. Linnaeana C. Christ. (S) = *N. Dryopteris* Mich. (M).

Onoclea Struthiopteris (L.) Roth (S) = *Struthiopteris germanica* Willd. (M).

Equisetum maximum Lam. (S) = *E. Telmateia* Ehrh. (M).

Sparganium angustifolium Michx. (S) = *S. affine* Schinz (M & L).

Oryza oryzoides (L.) (S & L) = *Leersia oryzoides* (M).

Phalaris arundinacea L. (S) = *Typhoides arundinacea* Moench (L & M).

Phleum phleoides (L.) Simonk. (S & L) = *P. Boehmeri* Wibel (M).

Agrostis alba L. (S) = *A. stolonifera* L. (L).

A. capillaris L. (S) = *A. tenuis* Sibth. (L & M).

Avena pubescens Huds. (S) = *Avenastrum pubescens* Huds. (sic) (M).

Atropis distans (L.) Griseb. (S) = *Puccianellia distans* Parl. (L).

Panicum sanguinale L. (S) = *Digitaria sanguinalis* Scop. (L & M).

P. Ischaemum Schreb. (S) = *Digitaria linearis* Crép. (L) = *D. filiformis* Koel. (M).

Vulpia bromoides Dum. (S & L) = *V. dertonensis* Volk. (M).

Bromus erectus Huds. (S) = *Zernera erecta* Panz. (L).

B. pratensis Ehrh. (S) = *B. commutatus* Schrad. (L).

Elymus europaeus L. (S) = *Cuviera europaea* Koel. (L).

Scirpus maritimus L. (S & L) = *Bulboschoenus maritimus* Palla (M).

Blysmus compressus Panz. (S) = *Scirpus compressus* Pers. (L).

Trichophorum caespitosum Hartm. (S) = *Scirpus germanicus et austriacus* (L).

Eleocharis pauciflora Link (S) = *Scirpus pauciflorus* Lightf. (L).

Schoenoplectus lacustris Palla (S) = *Scirpus lacustris* L. (L).

Nymphozanthus luteus (L.) Fernald (S) = *Nuphar luteum* Sm. (L).

Ranunculus flaccidus Pers. 1795, (S) = *R trichophyllus* Chaix = *R. paucistamineus* Tausch (L).

Erucastrum gallicum (Willd.) O.E. Sch. (S) = *Hirschfeldia Pollichii* Fritsch (L).

Brassicella Erucastrum (L.) O.E. Sch. (S) = *Brassica Cheiranthos* Vill. (L).

These examples will afford illustrations of divergences from a uniform system. If this applies to names it even more applies to grades, about which necessarily there are always likely to be differences of opinion. " The fewer the grades the fewer the differences." When one stands on the quicksands of species, sub-species, varieties, sub-varieties, forms, and sub-forms, with a rule that does not disqualify any variation in name whenever the plant is altered in grade one faces an appalling instability. The permanence of a trivial in whatever grade to which it may be transferred should be a rule without exception.

The standard of this Swiss Flora is extraordinarily high. We welcome the retention of such genera as *Rhinanthus*, *Helleborine*, *Centaurium* and *Statice*. We rejoice to see that *Rubus nessensis* takes, as it should, the place of the much more recent *R. suberectus* since the retention of the latter in some of our recent Floras could only be excused by ignorance of the facts or by the most special of pleadings. Anderson, when he used the name *suberectus*, distinctly says that he alters the name *nessensis* because it grows elsewhere than Inverness and that *suberectus* is the same plant. We notice, too, that both *Epilobium tetragonum* L. and *E. alpinum* L. are used as in our *List*. The genus name *Anthriscus* is changed to *Chaerefolium* Haller Hist. St. Helv. of 1768 which was restored by Schinz & Thellung in 1909. In the *Flora of Berkshire*, 1897, the almost identical *Cerefolium* Link was used. The latter name really dates from Fabricius Enum. Hort. Helmst. 36, 1759, but it is perhaps put outside the pale of post-Linnean citation. The authors are usually loyal to the retention of the earliest trivial but under *Anagallis* they retain the more recent *caerulea* instead of *femina* which was restored by Miller and is used even by Cibo before 1540. One is glad to see that *Gentiana germanica* and not *G. Wettsteinii* is used, that the earlier *Lappula* is used instead of the more recent *Echinospermum*, that *Prunella* is still spelled with a *P*, and that the Calamints are included in *Satureia*. One may add that among the numbered species many more or less fixed hybrids are included, such as *Carex xanthocarpa*, *Mentha gentilis*, *M. rubra*, *M. piperita* and many others, a wise course. Under *Euphrasia* are grouped *Bartsia viscosa* and *Odontites* and *serotina* the two last as distinct species. We offer our heartiest congratulations to the authors on the completion of such a thoroughly excellent Flora.

SCHLECHTER, R. Mitteilungen über Europaische und Medit. Orchidien. iv. *Serapias.*

SCHONLAND, S. Introduction to South African Cyperaceae. Dept. of Agric. of S. Africa, n. 3 & 4.

SCHROETER, Prof. C. DAS PFLANZENLEBEN DER ALPEN. pp. vi., 366, tt. 5. Zurich, A. Raustein; 10 marks.

SCHULZ, O.E. Pars II. Pflanzenreich, 84 heft, 1923. Cruciferae-Brassicaceae.

SCOTT, DUKINFIELD HENRY. EXTINCT PLANTS AND PROBLEMS OF EVOLUTION. Founded on a Course of Public Lectures delivered at the University College of Wales, Aberystwith in 1912. pp. 240, tt. 63. Macmillan & Co., London, 1923; 10/6. This excellent course of Lectures, which has been rewritten for this work, puts in a clear perspective the various arguments which have been from time to time, with greater or lesser force, put forth by their advocates. The consensus of opinion seems to demand the adoption of a general theory of evolution, and those who are its most active agents and not less those who may be antagonistic as well as those Gamaliels who seem to be a growing number, are alike indebted for so able and so fair a presentment of the case. It is refreshing to find from the pen of a great student of the subject such modest confessions of ignorance respecting many questions. They contrast favourably with the positive and dogmatic statements which some of the exponents of modern thought express on subjects which lie far beyond our ken. They remind us of the old expression in a Biblical commentary when not only the year, month and day, but the actual hour was given when the world was created. A century or less hence some of the modern pronouncements which have been made with equal force and inaccuracy will appear just as ridiculous. Dogmatic statements on the shadiest of shady evidence do not advance but actually retard the progress of knowledge. One feels that too much word-spinning on many subjects is used and that the time given to such debatable subjects might with greater advantage be devoted to true research. It seems difficult for this generation to believe that there was a time when " Darwin was almost like a bad word, which one did not dare to utter, lest it shock one's elders" or that as one preacher said Darwinism was " the offspring of a diseased mind." That feeling has been lived down, and Darwin's apotheosis has been witnessed. Now the pendulum is swinging back and there arises a scientific doubt respecting not so much the views actually expressed by Darwin as by those semiparasites who gather round a great name and seek for a notoriety by out-Darwinising Darwin. The perusal of this able presentment induces the reader (even if not so minded already) to assent to the necessity for the adoption of some theory of evolution. In passing we are glad to see that Dr Scott has not omitted reference to the permanence of the microspecies, for instance of *Erophila*, and he states that Dr Lotsy holds as the result of experiments that they are apogamous. This has also been asserted of the Hieracia and Taraxaca. Hybrids are practically absent from the three groups. (I am excluding the section Pilosella of the Hieracia). The question arises—what is the age of an individual apogamous *Erophila* or *Taraxacum*? Can a plant go on indefinitely reproducing itself apogamously? Experiments yearly on the offspring of an *Erophila* are needed to see (1) if in a period of years it dies out as the Potato weakens if not cross-fertilised, or (2) if after a period of apogamous growth it does not crave for and obtain a proper cross. In such a case, if a cross with its own form occurs, what is the resulting progeny? It is assumed that the fixity of characters in these micro-species proves (1) that they are distinct species, or (2) that the fixity of characters, which is not denied, is merely like a cutting of one individual which, of course, comes true. But it must be remembered that there are other large and very variable genera such as the Rosae, Rubi, and Euphrasiae which do hybridise and yet those uncrossed by another species are said to breed true and, though not apogamous, act as other microspecies. Again, no more variable genus exists than the Shepherd's Purse. Is apogamy present there? There is an immense amount of research needed on this subject. Dr Lotsy believes that crossing is a most important factor in Evolution and to a field botanist like himself it is an attractive theory. It appears to me that if in a locality where there are a few individuals of one species and a multitude of a second species a cross arises, the chances are of course great that it should be recrossed from time to time with the plants which are in greater abundance. It may be in a few years that the influence of the original cross has been stamped out. The question presents itself—is the plant then in the same mood as one that has never had such a cross? The answer seems to me to be in the negative. The plant seems much more prone to variability and not necessarily in the direction of either of its parents. Much has been written about Phylogeny, which Dr Lotsy severely says is no science but a product of fantastic imagination. We are glad to see that the doctrine of "inherited memory" has been ably and fairly stated by Dr Scott but, as he says, at present it is all pure hypothesis which awaits the result of extended cultural operations carried on through many generations. Dr Scott then presents a most valuable treatment of the fossil vegetation of the world of which he is a great authority, tracing it backward from the most recent flora through the Tertiary Period, the Cretaceous with the oldest known flowering plants and on back to the Mesozoic age, the Permian Transformation, the Carboniferous flora with its extinct group, the Seed-Ferns, and the Upper and Lower Devonian formations which exhibit the oldest known land plants. The Rhynie discoveries do not remain unnoticed. The book is well printed and excellently and copiously illustrated, and is undoubtedly one of the cheapest books on the subject of Plant Evolution which has been issued in recent years.

Seward, Prof. A. C. A Summer in Greenland. pp. 100, tt. 29. Cambridge University Press, 1922; 7/-. This little work is well illustrated and excellently printed. It is prefaced by a brief sketch of the discovery of Greenland and its physical characters. To hear of the sunshine of Greenland comes as a surprise to one who has explored the windy and well nigh sunless Faroes and Shetlands. In the district where Prof. Seward made his special work the annual rainfall is only about 9 inches. The extreme south of Greenland is formed by the granite headland of Cape Farewell, which is on the latitude of the southern extremity of the Shetlands. Thence to the northern extremity it is 1700 miles—a distance as great as from Balta to Morocco. Greenland has an average breadth of 600 miles, and an area about four times as great as that of France. The fossil-bearing rocks of the Disko ravines were an especial object of interest to Prof. Seward, and in these Cretaceous and Tertiary beds he found slabs of rock on which were clearly outlined impressions of large leaves like those of the Plane or Tulip tree, twigs of Conifers allied to, and identical with, the Sequoia, and in sedimentary rocks associated with basaltic lavas at Sabine Island and in Cretaceous sediments on Upernivik Island fossil leaves indistinguishable from the Ginkgo of Japan and China. Prof. Seward states that out of the 400 species which make up the whole of the Greenland Flora of the present day only one, *Potamogeton groenlandus*, is peculiar to this icy area. The remainder are either American or semipolar plants. To illustrate the statement that the climate of Greenland was warmer in Cretaceous times it is said that a species of Breadfruit was discovered by Prof. Wathorst in 1883 on the Coast of Disto Island. The Greenland mountains are much higher than those of Shetland or the Faroes, reaching as they do to 4000 feet near the coast, and to 10,000 feet in the interior. From these elevations glaciers of great size—one, the Humboldt Glacier, is 60 miles in breadth—creep to the sea, where the glacier shows as a cliff of 300 feet high. Pieces break off and form icebergs sometimes of enormous size. The booming of the breaking icebergs is often the only sound that disturbs the silence of an arctic night. The Umanak Fjord is beautifully represented on t. 16 with its scattered icebergs, but black-and-white, after all, does scanty justice to the colours presented on a sunny day when some of the floating icebergs are rosy-tinted, others banded with strips of lapis lazuli hue or with the colour of the green-blue of a sparrow's egg. An interesting account is given of the Eskimos and their government. The chapter on Greenland vegetation is a very pleasing one. Evidently, short as is the Greenland summer there must be more sunshine than in the Shetlands and Faroes. Very many species occur which have failed to reach either of those groups of islands. Illustrations are given of a bogland covered with *Eriophorum Scheuchzeri* (spelled *Scheucherzi*). He speaks of darker and more brilliant Dandelions, but these are not identical with our British species. The more powerful sunlight is evidenced by the fruiting of *Vaccinium Myrtillus*, which rarely fruits in Shetland. *Sedum*, the beautiful *Diapensia* and two species of the delightful *Cassiope* flourish. Prof. Seward thinks that *Phyllodoce caerulea* may have originated in the Northern Pacific region probably in the latter part of the Tertiary epoch long before the Glacial period. As the climatic conditions in the north became more severe it gradually migrated to the south, where it is still represented in the central Pyrenees and in Japan. As conditions ameliorated the species returned to the north or ascended to the higher regions or more southern latitudes. On the other hand it is suggested that *Cassiope tetragona* began its wanderings in East Central Asia. *Archangelica* is native and has stems a yard high. It is used by the Eskimos as an article of food. On the whole the Greenland vegetation competes in the show it makes with that of warmer countries, and is in some respects superior. The effect of spring is the "miracle of the Earth reclad." Annuals are very rare. Only 4 or 5 species complete their life-cycle in one season. The Antarctic region is separated from the nearest land by the turbulent Southern Ocean, so that the Flora of that wind-swept and desolate region within the Antarctic circle possesses not a single flowering plant, and the most southernly grass known to occur (*Deschampsia antarctica*) grows only as far south as 62 degs., which is the equivalent in the north to the latitude of the Faroes and Finland. The book is pleasantly written, and gives a vivid description of Greenland. One only regrets that more room could not be found for a complete list of the Greenland Flora.

SMALL, Prof. J. & ADAMS, Miss F. M. J. Yohimbe Bark, *Corynanthe Yohimbe*. S. Africa Pharm. Journ., March 22, 1922. More about the Erectness of Plants. Proc. Belfast Nat. Hist. & Phil. Soc., February 22, 1922. See Gard. Chron. May 5, 1923.

SMITH, A. BERNARD-. POISONOUS PLANTS OF ALL COUNTRIES. Ed. 2, pp. 112. Baillière, Tindal and Cox, London, 1923; 6/-.

SMITH, Prof. W. WRIGHT and SMALL, Prof. J. *Formania*: a new Genus of the Compositae from Yunnan belonging to the Chrysanthemidae. Trans. Bot. Soc. Edin. 92, 1922, with a species *F. mekongensis* from West China. The genus is named after the Rev. Adam Forman, one of the chief organisers in Scotland of the supply of Sphagnum for war-dressings. *Parasenecio*: a new Chinese genus of the Compositae with the species *P. Forrestii*, *l.c.* January 22, 1920.

SMITH-PEARSE, Rev. T. N. HART, O.M. Hand-List of Flowering Plants of the District of Marlborough and Ten Miles Round, 1919, with MS. additions up to 1922. A very useful and valuable list of 792 plants with 18 additional in MS. *Viola cornuta* is said to be established on Medwyn Common where *Botrychium* still occurs. Among the recent unpublished additions are *Hieracium praealtum*, *Eleocharis acicularis*, *Orchis praetermissa*, *O. maculata* vera, *Helleborine purpurata*, *Polygonum maculatum*, var. *incanum*, *Orchis morio* × *maculata*, and *Mentha piperita*. The publication of this List and the recent acquisition of a splendid and nearly complete collection of the British species of plants which has been presented, in memory of her son, Alan, an old Marlburian, by Mrs Wedgwood must prove a great stimulus to the study of botany, especially of the flora which is in the immediate neighbourhood of the College. It will greatly assist in producing a complete Flora of the county now so badly needed.

Sprague, T. A. Notes on *Heliocarpus*, in Kew Bulletin 348, 1923. Two new species are described.

Tahourdin, C. B. Some Notes on British Orchids. pp. 12, 1923. Privately printed. Some very interesting points are brought out in this brochure. Under *O. mascula*, a plant was gathered at Brightling, Sussex, with a flower spike 7 inches long and over 40 flowers. A peloric form was noted near Ockley, Surrey. White-flowered specimens came from Alkham, E. Kent, and Woolwich Wood. Colonel Godfery sent a fine specimen of *O. latifolia* (whatever that may be) from the New Forest, and Mr Dix says it grows in marshy fields at Beaulieu, Hants. *Orchis praetermissa*, hybridised with *O. Fuchsii*, was found at Ham Ponds, Sandwich, and its var. *pulchella* was sent from Muthill, Perth, and Dornoch. *Orchis incarnata* was got at Ham Ponds, Kent; Cheshire sand dunes, and Dornoch. The two last seem to be var. *dunensis*. At Dornoch what may be *O. incarnata* × *praetermissa* occurred. We are told that 26 specimens of *Orchis hircina* bloomed at Adisham, E. Kent. Six white specimens of *Habenaria Gymnadenia* occurred at Ham Ponds, one of which was peloric. At Ditchling a specimen of *Ophrys apifera*, with the sepals nearly white and the lip yellow-green, was found. Photographs of the New Forest *Spiranthes aestivalis* and of the Irish *Spiranthes* from Lough Neagh are given. Of *Cephalanthera Damasonium* (*grandiflora*) three etiolated specimens grew at Barham, Kent, in which the stem and leaves were of a light straw colour. A good plate of the two-flowered specimen of *Cypripedium Calceolus* is also included.

Tansley, A. G. Practical Plant Ecology: a Guide for Beginners in Field Study of Plant Communities. pp. 228. Allen & Unwin, London, 1923; 7/6 net. Elements of Plant Biology. pp. 410. Allen & Unwin, London 1923: 10/6.

Vestnik. Reports of the First Congress of the Czechoslovak Botanists in Prague under the Presidency of the Committee in 1923. pp. 114. This affords a striking proof of the interest taken in Botany in the new Republic.

Washington. United States Department of Agriculture, Bureau of Plant Industry. As is usual the year witnesses a prodigious output of literature by this department. The Inventory of Seeds and Plants received from March 21, 1920, to March 31, 1921, published in 1923, covers the numbers 49124 to 52854. The introductory statements by Mr David Fairchild, the Agricultural Explorer in Charge, are always readable and valuable and bear witness to a driving power which is not always characteristic of European Government Departments. While the greater part of the " Introductions " are outside our scope yet many of the notes teem with interest. One regrets that space does not allow of a fuller quotation. Pub. No. 62, under 49256, is an excellent plate of the very showy *Buphane disticha*, well named the Fire Lily of the Victoria Falls. The Buckwheat is named *Fagopyron vulgare* Hill, an accidental though excellent binomial which was subsequently used by Nees. Under 50300 is *Rubus nutkanus* Moc., the unprickly Salmon berry of Alaska, now naturalised in Forfarshire and elsewhere. It is stated that the seeds germinate after being fully 15 years underground. *Vicia dasycarpa* Ten. (50318), a common adventive in Britain, is said to produce good seed crops. In n. 64 Mr Fairchild says that the Giant Bamboo of the Malay Peninsula, *Dendrocalamus giganteus* (51026), attains a height of more than a hundred feet, and that the beautiful Puka tree, *Meryta Sinclairii* (51049), has the largest leaf of any New Zealand plant. Originally only one tree was known, then 27 others were discovered in some small islands of the Hauraki Gulf. It must be one of the rarest trees in the world. *Chenopodium album* (51214), which is frequently alluded to as an excellent edible vegetable, is said to be one of the principal crops of the Hill Tribes of the Western Himalayas. A good illustration is given of a magnificent *Hibiscus* (50693), *H. Brackenridgii*, from Hawaii. It has deep canary-yellow flowers six inches across. Few flowers are edible, or rather are used as foodstuffs, yet the pale cream-coloured corollas of the Indian Mowra, *Madhura indica* (51155), form an important article of diet in the Central Provinces of India, where it is estimated over 1,000,000 people consume something like 80 pounds each per annum. When fresh they are extremely sweet with a peculiar pungent flavour but, when dried, they have a fig-like taste. By fermentation they afford mowra spirit, about 90 gallons of a 95 per cent. spirit being yielded by a ton of flowers. The nuts yield about 35 per cent. of a fatty substance which is used for soap or candle making. The sweetness is chiefly due to the presence of invert sugar (40-70 per cent). During the war acetone was obtained from the flowers. It is now suggested that the flower is an available source for the production of motor spirit. *Cotoneaster Simonsii* (51493) is said to be used in Nairobi for forming ornamental hedges. A hybrid of the Black and Lombardy Poplar × *Populus Chaikouiensis* (51381) is said to be the most rapid growing poplar known. It has been introduced into the States from Orleans, France. *Cotoneaster microphylla* Wall. (51843) is native to China and the Temperate Himalayas from 4000 to 10,000 feet. It is strange how well it has adapted itself to low altitudes in our less sunny climate. *Vicia Cracca* L. (52270), a native of both hemispheres, is said to be worth attention as a fodder crop. *Trifolium subterraneum* (52335) is mentioned as being one of the most nutritious plants known to agriculture. *T. glomeratum* (52356), on a small strip of extremely fertile volcanic land between Mount Gambier and Mount Schank, Adelaide, covers much of the pasture land to the exclusion of most other plants. After being grazed for some months it will make a dense mass 2-2½ feet high, which is cut for hay. It also grows well in soils low in phosphatic content.

WASHINGTON JOURN. AGRICULTURAL RESEARCH. G. 304, vol. xxxiv., n. 7, May, 1923. Spores in the Upper Air. E. Stakman, A. W. Henry, G. C. Curran & W. N. Christopher. These experiments were carried out in order to see to what height spores of pathogenic fungi, etc., may be present in the upper air. Airplanes were used in preference to balloons, kites or other similar devices because long distances could be covered in a short time, sporetraps could be exposed easily at different altitudes, and the direction of flight could be changed at will. Ordinary microscopic slides, 3 x 1 in., smeared lightly with vaseline on one side, were exposed in different ways. Three of these are described. The results showed that there are many fungus spores at altitudes as high as 11,000 feet above the earth's surface. Spores of *Alternaria* were the most numerous, but there were also spores of *Puccinia*, *Cladosporium*, *Tilletia Ustilago* and other genera. Some special experiments were made over Barberry bushes. At 12,000 feet one spore was detected, but at 2000 feet 6, and at 1000 feet 15 were obtained. Even 25 miles away, at 2000 feet, one spore was obtained from an exposure of 3 minutes. On a single slide exposed for 5 minutes at an altitude of 10,500 feet near Fort Crook in Nebraska 224 spores were caught. At an elevation of 8000 feet 827 spores of known identity, and about 200 of unknown identity, were obtained. The highest altitude at which slides were exposed was 16,500 feet in Texas, or more than 3 miles above the surface of the earth, when two uredinio-spores of what appear to be *Puccinia triticina* were caught. Illustrations of the traps are given. The results show how not only plant but human diseases may be spread far from the starting point. They suggest that experiments on a larger scale at lower elevations might detect small seeds, etc., and thus help to account for the wide dispersal of plants, so many authorities nowadays doubting the possibility of wind carriage for more than a very limited distance.

WATSON BOTANICAL EXCHANGE CLUB. The Thirty-ninth Annual Report. Distributor, J. E. Little. Hon. Sec., H. Stuart Thompson. 2735 specimens were sent in for distribution. There is an allusion to our *Cirsium eriophorum* being different from the Continental plant. See *Rep. B.E.C.* 361, 1913. The Secretary seems to have overlooked the fact that Petrak has already written a paper on " Der Formenkreis des *Cirsium eriophorum* (L.) Scop. in Bibl. Bot., heft 78, 1912, in which he makes our English plant a subspecies under the ill-chosen name *britannicum*—ill-chosen for two reasons (1) that it is an English, not a Scottish-English, plant ; (2) because *britannicum* has already been used as a trivial for *pratense*. This was an error, because Scopoli's plant was *heterophyllum*. There are brief biographies of A. R. Waller and Canon Vaughan. On p. 228 I am asked if I did not mean *Carex muricata* Goodenough not of Linnaeus. The answer is no. I meant *C. muricata* L. Sp. Pl. which should not be used in the sense of *C. Pairaei*. The description in the *Sp. Pl.* covers our common form and does not restrict it to *Pairaei*. It it true a specimen of *Pairaei* is in the *muricata* cover in the Linn. Herb., but there is no evidence that the specimen was before Linnaeus when he wrote the *Sp. Pl.* The synonyms do not refer to *Pairaei* nor does it grow " in nemoribus humentibus." The Club is to be congratulated upon an excellent Report. With reference to the *Verbascum Lychnitis*, var. *micranthum* (Moretti) mentioned on p. 219 Mr Dunn's conclusions, let me say, were that this represents *V. Lychnitis* type (after the removal from that originally compound species of *V. pulverulentum* by Villars) and that our common British *Lychnitis* with larger flowers is the var. *album* (Mill.). In that way it is shown in my *List* and in Hayward's *Pocket Book.*

WEAR, SYLVANUS. A Second Supplement to, and Summary of Stewart and Corry's *Flora of the North-East of Ireland.* Published by the Belfast Naturalists' Field Club. pp. 129, 1923, with portrait of the compiler, and an introduction by R. Lloyd Praeger. We heartily congratulate Mr Wear on the excellent manner in which he has compiled the very numerous additions to the old Flora of an interesting area, including, as it does, the great sheet of water, Loch Neagh, with its shores here and there showing *Deyeuxia Hookeri* and *Spiranthes Romanzoffiana.* Of the latter a splendid photograph is given. The remarkable point about its occurrence in the north of Ireland is that it escaped observation until 1892. Is it a recent arrival, or an overlooked species? It is now known for five counties in the north, while the Bantry Bay locality no longer yields it. The statement that it was destroyed there (*Country Life* Sept. 16, 1922) by the field being ploughed and planted with crops as long ago as 1886 is incorrect. Mr A. H. Evans has seen it in flower there since that time, and in 1906, when I last visited the Cork locality, the field where it used to grow was a rough damp pasture and not tilled. The statement in the prefece that *Zannichellia polycarpa* has not been seen since 1890 is scarcely correct. I collected it there with Stewart in 1898, although at that time its existence was rather precarious, as the water was much polluted. One notices the omission of the branched variety *polycephalum* of *Cirsium pratense* which I gathered on Formoyle Hill, Londonderry in 1912. It is often mistaken for the hybrid with *palustre.* One may also add *Potamogeton perfoliatus*, var. *ovalifolius* Wallr. and *P. panormitanus* Biv. from the River Bann near Toome bridge where I gathered them in August 1909. Among the interesting additions are the discovery of *Carex extensa* on the shores of Lough Neagh, *Potamogeton coloratus*, *Stellaria Dilleniana*, *Orchis pyramidalis*, etc. One notices that *Glyceria festuciformis* is still retained both in the text and introduction. It says that " elsewhere than the Strangford Lough and the Shannon estuary it is exclusively Mediterranean in its range." My contention is (1) that the Strangford Lough plant is identical with the plants of Chichester and Pagham Harbour, Sussex, and those from Hants and Dorset, and (2) that none of these is identical with the Istrian *Glyceria festuciformis*, but that they are a well characterised variety of *Glyceria maritima* which I have named var. *hibernica*. Hackel in 1893, I believe, named the Shannon plant (which I have not collected) var. *Foucaudii*, and that plant is not " confined elsewhere to the Mediterranean." His original plant came from Charente Inférieure and from the Isle of Grain, Kent. More recently Dr Stapf named a plant *festuciformis* which was found at Egloshayle Marsh, Cornwall (*Rep.* 636, 1922) but I have seen no specimens. Dr Stapf referred my Sussex plants to *maritima*, and on October 30, 1916, wrote from Kew, " In my opinion there is no *festuciformis* in the British Isles. Your specimens from the south of England and the one from Ireland are *A. maritima*, var. *Foucaudii*. They are at any rate indistinguishable from a specimen named by Hackel *Foucaudii*." Stapf goes on to say that " *festuciformis* seems confined to the coasts of Southern France, Italy, the Balkans, Southern Russia, and Persia, the last three of which are extra-Mediterranean. It is only fair to add that *festuciformis* is a highly critical species —if indeed it deserves that grade—and that the Istrian type is not identical with the Irish or with any English specimen I have as yet seen.

WEATHERWAX, P. THE STORY OF THE MAIZE PLANT. pp. xv., 247. Chicago, The University Press; 1.75 dollars.

WILD FLOWER MAGAZINE. We heartily congratulate Mrs Dent upon the great success which her Society has attained, and upon her rallying round her such enthusiastic workers. Naturally, with so many young members, wrong identifications will occasionally be made, but on the whole there is an extraordinary improvement, in part owing to the vigilant part taken by the Branch Secretaries. Among the queries for the year which these records evoke are *Peucedanum palustre* from Essex or Shropshire and Hants, *Carex elongata* and *Hypochoeris maculata* from Northumberland and *Stachys germanica* for Kent or Sussex. Interesting papers are printed, including those on the Spider Orchis by H. S. Salt, Salzburg plants by J. A. Codrington, Lesser Celandine Counts by J. Parkin, Frequent Mistakes by Lady Davy, and Scotch Plants by R. W. Butcher. We are told that *Urtica pilulifera* has been found in Devon. Can a specimen be produced? The Ventnor *Cotoneaster* is not *vulgaris* but the Indian *C. microphylla.*

WILLMOTT, ELLEN. THE GENUS ROSA. 2 vols., with 130 superb Plates, printed in colour by Alfred Parsons, £26 10/-, or in one payment of £3 10/- and eleven monthly instalments of £2 2/- each.

WOODHEAD, T. W. Botanical Survey and Ecology of Yorkshire: Being the Presidential Address delivered to the Yorkshire Naturalists' Union at Scarborough, December 9, 1922. Reprinted from the Naturalist, pp. 97-128. Illustrated with excellent portraits of John Phillips, John Gilbert Baker, F. Arnold Lees, J. Fraser Robinson, William West, Charles Crossland, Robert Smith, William G. Smith, and L. C. Miall. The mere glance at these portraits reminds one how old one is becoming, and what a pleasure it is to have known such a series of great workers and painstaking observers as these men were. Eheu fugaces! Dr Woodhead has given an entirely worthy notice of these men and their work in his stimulating address. As he says, the members of this vigorous Union are drawn from all sorts of people, " even the Presidents have been Bankers and Butchers, Doctors and Drapers, Civil Servants and Chemists, Printers and Parsons, both Church and Dissent —including Bishops, Manufacturers and Merchants, Professors and Teachers, and even (why even) Museum Curators, not to mention Lords, Baronets and Knights." Among these worthies it is pleasing to note that Botany stands very high, including, as it does, the veteran J. G. Baker, once Secretary of this Society; F. Arnold Lees, once Secretary of the Botanical Record Club, and author of one of our best local Floras; and that monument of persistent algalogical work, William West. The address concludes with a very excellent account of the development of ecologic study of the great area embraced in the Yorkshire Union. There is a most useful Bibliography.

Yapp, Prof. R. H., M.A. Botany. A Junior Book for Schools. pp. 199. University Press, Cambridge, 1923; 3/6. The number of Botanical text-books rival the sands of the sea in multitude, yet anyone who is acquainted with Prof. Yapp will at once grant that he is not likely to repeat well-worn facts or recapitulate the commonplace. Therefore we find in this portable and convenient text-book an original outlook and treatment. The drawings which illustrate it are original, and they are the more excellent because they have been reduced from much larger scale drawings. The language used is clear and welcomely free from unnecessary details, and those appalling and repulsive so-called scientific names which some botanists think it necessary to use or invent to give an air of distinction to the dreary pages they occupy, hoping probably to produce an impression 'of what a clever young man this clever young man must be' who can thus so succcssfully obscure a subject in itself not too free from obscurity. For elementary work this book is warmly recommended. It deserves a large circulation. The book is extremely well printed, excellently arranged and copiously illustrated. The employment of two distinct kinds of type assists in bringing the salient points into proper prominence. The Dovey Salt Marshes in 1921. Records the occurrence there of *Spartina Townsendii*, but Prof. Yapp kindly tells he has since learned that it was intentionally introduced. The Concept of Habitat. Journ. Ecol. x., May 1922 being the Presidential Address to the British Ecological Society at the Manchester Meeting, December 17, 1921. The definition of the word habitat—a dwelling place, a place of abode is given, but he extends the meaning so as to include not only the abode itself,but also, in so far as it affects the inhabitants, the conditions obtaining in the abode, *i.e.* the ecological factors. In this sense habitat corresponds more or less closely to the English Environment or to the word "milieu" as used by the French and "standort" by many German writers. The definition in the *Oxford Dictionary*, for which I am partly responsible, is " the locality in which a plant or animal naturally grows or lives; habitation. Sometimes applied to the geographical area over which it extends or the special locality to which it is confined; sometimes restricted to the particular station or spot in which a specimen is found, but chiefly used to indicate the kind of locality, as the seashore, rocky cliffs, chalk hills, or the like." After well-reasoned arguments Prof. Yapp distinguishes four main classes of habitats—(1) The Successional; (2) The Communal; (3) The Individual, and (4) the Partial Habitat. Prof. Yapp concludes by urging the formation of an Ecological Herbarium and on this subject we hope to print an appeal from him at no distant date. As he says, the ordinary herbarium does not supply the kind of information which a student of ecology requires but which many of our members would be in a position to supply.

OBITUARIES.

BARCLAY, WILLIAM, A.L.S. Born at Tulloch, near Perth, March 19, 1846; died at Perth May 10, 1923. A long life well spent may be written of William Barclay, even if only for the fact that the greater part of it was devoted whole-heartedly to the training and education of the young. It is not given to all who choose teaching as a profession to find their efforts rewarded always with some fair measure of success, and if William Barclay ever had any doubts, those who had the good fortune to pass through his hands can look back and provide the answer. His first teaching appointment, after having served an apprenticeship in Perth and a College training in Edinburgh, was to Glenrinnes School in Banffshire. There he remained for fully five years and developed that affection for the north which drew him back again for many a summer holiday. In 1871 he returned to his native city as headmaster of Watergate School, where he remained until 1884 when he was promoted to the new and larger Western District School, the work of which he directed with much ability until he retired in 1911. In Perth not only did he take an active interest in educational affairs, but he was also a prominent and helpful citizen, lending much assistance in the management of the Royal Infirmary and acting as Convener of the Books Committee of the Sandeman Public Library from the time of its foundation. The countryside always appealed to Barclay and before he commenced Field Botany as a serious study, he seldom missed an opportunity of following the angler's art, noting meantime the virtues of Perthshire's varied streams and, no doubt learning also something of the county's floral wealth. Association with Buchanan White brought him definitely into the botanical field and the task of preparing a Flora of Perthshire which White had set his mind on accomplishing was entered into by Barclay with genuine enthusiasm. During the years of active field work, Barclay contributed numerous papers towards a fuller knowledge of the distribution of Perthshire plants, most of which have appeared in *Trans. Perth. Soc. Nat. Sci.* Thus did he materially aid in the collection of data on which White's "Flora of Perthshire" was based, and more than is generally known did he participate in the labour of seeing that work into print, after the death of its author. There is no need to dwell here on all Barclay did to promote the study of Perthshire Botany. Suffice it is to say that his interest and enthusiasm never lagged and in the activities of the Society of Natural Science in Perth he played a leading part, first as Editor of its publications for 12 years and then as its President for 11 years. He recognised that finality in Natural Science is not easily, if ever, attained, and in 1912 he was able to draw up a long report on additions to the list of Perthshire plants which had been made since the publication of Dr White's "Flora" in 1898. Thus it was that Barclay came to know Perthshire well. Few parts of it were unfamiliar to him and a wide knowledge of the history and of the romance of Scotland's premier county, in addition to his botanical acumen, made him an ideal leader at a field excursion. It was then, indeed, that one found him at his best. He was not a very frequent visitor to the south, but there must be many members of this Society who have corresponded with him and so have learned something of his characteristic straightforwardness and of his ever ready willingness to help. Others have sought his aid in finding some of Britain's rarest plants and whether they knew it or not have more than once incurred his displeasure because of the number of specimens collected, so jealously did he guard the botanical treasures of his own county. His actual discoveries in the nature of additions to the British Flora are relatively few, but of general interest are *Poa palustris* found in 1889 in the marshes of the Tay and *Potamogeton venustus* from the River Earn in 1915. It is perhaps by his contributions to the study of the genus *Rosa* that Barclay is best known. For a number of years he corresponded with Professor Crépin of Brussels as well as with other continental authorities on that baffling genus, and with the help thus obtained he published from time to time his observations on the Scottish material he had collected. His chief paper in this connection appeared in *Ann. Scot. Nat. Hist.*, 1896 under the title "Notes on Scottish Roses." Although he had ample material and opportunity to increase the number of varietal names, especially in the northern *glauca-coriifolia* derivatives of the aggregate *canina*, he deliberately refrained from doing so. Hair-splitting did not appeal to him. Only once, and after much careful study, did he describe as new a form of *R. coriifolia* under the name *R. subcoriifolia* in Ann Scot. Nat. Hist., 1899. In his latter years he collected little else but roses and as his views matured he gave expression to them in a number of papers published in *Proc. Perth. Soc. Nat. Sci.* 1911, 1915 and 1916. These contain much valuable information and deserve from rhodologists more attention than they have received. His own name is commemorated in *Rosa Barclayi*. In the early part of the present year Barclay was recommended for election as an Associate of the Linnean Society. He lived just long enough to learn that the honour had become his, for his death occurred only seven days after the date of election. The writer knows well how greatly he prized the honour, which was but the just reward of one who had devoted much time and thought to the study of Nature's ways. His wife predeceased him only about four months and I think he never quite recovered from the loss of her who had been his life-long companion. J. R. MATTHEWS.

One cannot allow the notice of Mr Barclay's death to pass by without bearing testimony to his merits. Our Exchange Club Section is especially indebted to him for his most willing and able criticisms on the plants sent in. As Mr Matthews has so well said, his knowledge of Scottish Roses was unique and his contributions to the *Proceedings of the Perthshire Society of Natural Science* have not received adequate attention. These numerous local Journals are apt to act as a mausoleum for the contributions they publish. It would be so useful if a précis of them could be sent to our *Report* which would cause them to be more easily accessible. I had known Mr Barclay for many years and never allowed a visit to Perth to take place without calling on him and his good wife. He showed me *Alchemilla argentea* growing near the railway at Perth, and although far from gardens I expected it was of garden origin. He also took Mrs Wedgwood and myself to see the *Ledum* near the Bridge of Allan. It was in poor condition and barren. How any one could have imagined it native there it is hard to say. It grew under the shade of planted spruce and larch and it was in such small quantity and bad condition that I could not say whether it was *palustre* or *latifolia*. We also visited Methven bog where *Scheuchzeria* once luxuriated but where a colony of gulls had probably destroyed it. Near by we saw the Perthshire *Carex magellanica*—but not quite typical. In the Dovrefeld in 1922 we saw it with *limosa* and *rariflora* in close contiguity. One hopes to see a memorial tablet to Mr Barclay placed in the Entrance Hall to the Museum in which he took such interest and for which he did such real service. I shall be glad to receive subscriptions for such a purpose, which I trust will meet with the approval of the Perthshire Society with which he had for so long a time been connected.

Bidder, Rev. H. J. Born at Mitcham, Surrey, 1847; died at Oxford, November 1923. He was the son of the " calculating boy," and if he did not inherit his father's wonderful arithmetical genius, he had a magnificent memory for plant names. He was educated at Harrow, matriculated at Corpus Christi College, Oxford, became a scholar of University College and took a First in the Final School in 1870. In 1873 he was elected to the Fellowship at St John's College and took Orders, becoming Curate of St Giles. Then he went to the College living in a pleasant neighbourhood at Fyfield in Berkshire. In 1880 he became Vicar of Holberton in his father's County of Devon. In 1887 he came back to Oxford as Vicar of St Giles, an office which he held to 1903. For many years he was burser of his

College and signalised his occupancy of that office by forming a most beautiful rock-garden which he filled with rare plants, many of his own collecting in the Pyrenees and Alps. He had the knack of making plants grow and to look at home. It was amazing to see the result with such a meagre staff, but his head gardener was equally a flower-lover and not a whit less industrious. Mr Bidder made hundreds of people happy, and none could visit the lovely garden of St John's without feeling the ' charm of Oxford ' and experiencing the soothing influences of the spacious expanse of well-shaven turf, the stately masses of foliage of the Horse-chestnuts, the caws of rooks in immemorial elms, the gracious parterres of white and pink *Fraxinella* of which he was a most successful cultivator, the hoary walls serving as a chaste back ground for the delicate blue of *Ceanothus* or the purple blossomed *Clematis*. These wrought upon the wearied worker from some dry-as-dust study or from the midst of the noise and rattle which in an increased degree seems to be the inevitable penalty laid on those who live near the hub of the universe and upon the toilers in mine or workshop from the busy midlands. Mr Bidder did not suffer fools gladly, nor did he welcome the over-dressed, or perchance the under-dressed, and gushful ladies from suburbia, to whom his blue poppies, his foamy pyramids of the Crustacean Saxifrage, or his delicate Erodiums were alike ' thrilling.' To these he could be scathingly sarcastic. But see him with Miss Willmott or with Canon Ellacombe, and there was no trouble he would not willingly take to give them of his best. For many years he was Curator of the Botanic Garden and we always felt the better of his wise advice and willing help. Should some special seed be wished to grow one felt that to no one could it be more safely trusted than the Burser, and many curious plants from Salonika saw daylight in Oxford. I had known him well for forty years and his death was a distressful severance of a link. He had not been ailing long—indeed it seemed a very short time since he was showing me some of his more recent acquisitions which were additional beauties on his well planted rockery about which one will now see mostly ghosts of the past. To the School of Forestry at Oxford he rendered most valuable aid and mainly through his influence and exertions Bagley Wood itself was devoted to its service.

Hawley, Sir Henry Cusack Wingfield, Bart. Born December 23, 1876; died November 18, 1923. He was the son of the fifth Baronet (the mother of the first Baronet was aunt to Sir Joseph Banks). He was educated at Eton and Magdalen College, Oxford, and then went to the Bar. He served in France during the Great War. Succeeding to his father in 1909, he married in 1913 Marjorie Florence Curteis, and leaves a son David Henry, the present Baronet. He joined our Society and was able to record a new locality for *Lobelia urens* not far from his own beautiful estate at Lytchett Maltravers, near Poole, in Dorset where, as he says, it seems certainly native. But his special interest lay not with flowering plants but with the lower Fungi and he was an acknowledged authority on Pyrenomycetes.

Plymouth, the first Earl of. Robert George Windsor-Clive. Born August 27, 1857; died at Great Cumberland Place, London, March 8, 1923. At his Worcestershire residence, Hewell Grange, in the latter part of the eighteenth century, George Don, the Scottish botanist, was an under-gardener. Lord Plymouth was the son of the Hon. Robert Windsor-Clive who died when the boy was two years old. At the age of twelve, on the death of his grandmother, he became the fourteenth Baron Windsor. Lord Windsor was educated at Eton and St John's, Cambridge, and married Alberta, daughter of Sir A. Paget, long our Ambassador at Rome. In 1905 the old peerage in his family was revived and he was created Earl of Plymouth. He had a very beautiful estate at St Fagan's, Glamorganshire, and to the neighbouring town of Cardiff, of which he was Lord Mayor in 1895, he presented part of his demesne—called the Great Wood. During the War he threw all his energies into the work of raising and equipping recruits. He was a model nobleman. One who belonged to the so-called idle class, he was always working at some patriotic movement. He was a cheery chairman of meetings, a liberal supporter of Science, Art and Exploration. It must be remembered that he saved the Crystal Palace and its grounds from the speculative builder. He himself gave £30,000 to the purpose and made himself responsible for the collection of nearly a quarter of a million pounds. The retention of such a splendid open space and Paxton's palace is due to his public spirited generosity.

He was chairman of the trustees of the excellently arranged Tate Gallery, and in the Queen Victoria Memorial Scheme he was a moving and inspiring spirit. How much he was appreciated by "his own people" will be seen by a letter in the *Gard. Chron.* p. 154, 1923.

Rothschild, the Hon. Nathanial Charles, D.L. Born May 9, 1867, the second son of Lord Rothschild; died at Ashton Wolds, Northamptonshire, October 12, 1923. Married in 1907 to Rossika third daughter of Capt. A. E. von Wertheimstein of Nagy-Varad, Hungary, by whom he had one son and three daughters. He was educated at Harrow, where he produced a volume on the local Lepidoptera, and Trinity College, Cambridge, taking honours in part 1 of the Natural Science Tripos and becoming M.A. in 1901. He was from a youth fond of Natural Science. I remember him telling me that his father bought for him one of the founders' shares in the Burmah Ruby Mines and that it so appreciated in value as to be worth more than he thought a boy ought to have, so he gave him a microscope instead, a gift which after all opened to him a vista of things more precious, if not so expensive, as rubies. So that beginning with insects he specialised on fleas and when he was only twenty read a paper on two new species of that active, if not popular, family. On this group he became the acknowledged authority and he spared neither pains nor expense in working out the subject. His unrivalled collection was presented to the Natural History Museum and the gift was endowed with means for its upkeep. One of his last contributions on this subject was a report on the Siphonoptera collected in the Norwegian Expedition to Nova Zembla in 1921. His knowledge of British Lepidoptera was of a high order and he made a fitting President for the Entomological Society in 1915 and 1916, to which he gave a very able Presidential address, and to which he was a generous donor. He had a great liking for British Orchids and had paintings made of many forms by one of our members, Mr Bedford. He also purchased a very complete collection of water-colour paintings made from living specimens by Lady Davy. These, with other paintings of the genus *Iris*, he left to the national collection at Cromwell Road. It was owing to his love for these groups that I owed the honour of his acquaintance, which in time ripened to a genuine friendship. By his kindness I stayed at Tring and made a fruitless search for *O. militaris* near that town in both counties. Its disappearance is a mystery. He placed his old bachelor residence at Ashton at my disposal and there I have had many pleasant visits since one was unshackled from society conventions and could make the day's arrangements as one liked. From that delightful and hospitable residence, with the beautiful view of Oundle Church, its luscious meadows, and the great school, made so great by Sanderson's personality, the country round was pretty thoroughly explored. It was a visit to the White Water, with its masses of Marsh Orchids, which led to my being able to segregate *O. praetermissa* and its numerous hybrids. There in the avenue—a natural hedgerow—the Rose was found which I named *R. Rothschildii* a fairly distinct form not confined in Northamptonshire to that locality. The genus *Iris* was his great favourite. He had all, or nearly all, of the European species growing in his garden. He was especially glad to receive the Lincolnshire *Iris spuria* which I went to its locality to gather and, through my friend, Mr Sherring, the yellow-flowered *I. foetidissima* from Dorset. Both flourished well in his Ashton garden. He had a good knowledge of Hungarian plants in the identification of which he was greatly aided by Herr Degen. He was the Founder of the Society for the Protection of Natural Areas and a most liberal contributor to its funds. He also gave unsparingly of his time in order to have the whole of the areas of Great Britain which had a remarkable fauna and flora scheduled. Of these areas he obtained full particulars, not only of what species grew there or frequented them but also who was the last owner and what was its approximate value. All these details were scheduled and kept strictly private. In this work he had in me a most willing coadjutor. The correspondence was colossal. Several of these areas one had to visit—one to an estate belonging to the Marquis of Lansdowne at Clooncy on Kenmare Bay, when I had the opportunity of seeing Derreen, then a beautiful oasis where Bamboos and Eucalyptus of many species flourished in rank luxuriance, while the Azaleas and Camellias—it was early April—recalled the Azores. There had been an unusual fall of snow that year so that the distant Reeks looked like the snow capped Alps across the shimmering wavelets of Kenmare Bay. Alas one had to report adversely against the purchase of the beautiful valley. Had there been no population another verdict might have been given. It was felt that no security against trespass could be enjoyed. Now Derreen is devastated but Clooney remains, probably little changed. The journey was not fruitless, however, for a *Taraxacum* gathered has since been named as a new species, at present known only from Ireland. The Saltings on the Kirby le Soken marshes and Ray Island, Wood Walton and Monks Wood were also explored. The excursion by the International Society of Phytogeographers through the British Isles in 1911 with its enthusiastic account of Blakeney which appeared in our *Report* made Mr Rothschild determined to purchase it. He allowed me to act as treasurer and negotiator. My four months in bed from phlebitis was made less trying from the fact that I was able to obtain the requisite funds and to purchase the shingly stretch. Of course the chief supplier of the sinews of war was Mr Rothschild. I took it not as the least of many of his kindnesses that from time to time he came to spend the week-end or his Sunday during that enforced period of rest. It was through his energy that the Society became possessed of a Charter and he most generously gave Wood Walton Fen which I had recommended him to acquire because it was the home of some wonderful marsh violets and a rare *Luzula*. It was also a good place for Lepidoptera. Here he planted *Sonchus palustris* and the Fen ragworts, a fact which may as well be put on record, and here, too, he sought to introduce the continental form of the Large Copper which has so mysteriously become extinct as a British insect. Not only did he make this handsome gift but he endowed it. He was the right hand of his father in the great house of Rothschild with all its responsibilities. He was Chairman of the Alliance Assurance Company, owner of a Gold Assay Works, Deputy-Lieutenant of the City of London, High Sheriff of Northamptonshire, a land owner and a hundred and one other things. He had too many irons in the fire. His mind was always at work. When staying with him at Arundel House, when I was dozing in the morning, he would be dictating letters from his bathroom to his typist. This too full life reached its climax during the Great War for, in addition to the worries and responsibilities of business which Lord Rothschild's patriotic service to the nation naturally threw on him, he became a most responsible member of the Munitions Committee so that when I saw him in London in 1915 he looked overdone. That was the last time I saw his father, who had as usual come in for a few minutes romp with his grandchildren. Few people would have realised that it was the great financier who was playing woolly bear with his loved little ones. Then came his father's death. We pressed him very hard but without success to get away to Sutherlandshire for a complete change. He thought it over but felt bound to keep to the oar with the inevitable penalty of a complete nervous breakdown from which he never recovered. As time went by some months in each year were spent in Switzerland and Italy but the mischief had been done, the iron had bit too deep. Although I saw but little of him since the years of the great war our correspondence was maintained to the end. In June he sent me a marsh orchid from Marsworth, Bucks, which is *O. praetermissa* × *Fuchsii*. Within a fortnight of his lamentable death he had made enquiries about the habitats of *Milium* in Scotland and meditated a hunt in search of some insect which fed on it. Of his myriads of acts of kindness most people will never know. I chaffed him about the very affectionate terms I had heard him spoken of at Bettyhill last July. When he and his family were last there (Mrs Rothschild then found *Rhinanthus major*) a poor woman had lost her only cow. She went round with a paper asking for donations to buy another. Mr Rothschild, hearing of this, enquired if it were a genuine case and finding it was gave the landlord £15 to buy her another which, as may be imagined, filled the poor body's heart with a never ending gratitude. Showing me the cow and its calf with great pride, when she realised that I knew her benefactor, it was not only a sight for, but the cause, of sore eyes. I told him of the spell he had cast but suggested that after all it might only be a case of calf-love. To our Society he was a generous member. On one occasion when he thought some injustice was done he wrote a kindly letter saying "I detest injustice and I feel sure that . . . . have tried (and I am glad to say have failed) to treat you most unjustly. Will you accept the enclosed as a donation." So our Benevolent Fund benefited by the extent of twenty pounds. The sympathy of us all goes out to Mrs Rothschild and the fatherless children. We hope that Victor, who has inherited his mother's beauty and, we trust, his father's kindliness of heart, will be imbued with the same spirit of genuine helpfulness and sympathy, and have the rapid, alert mental powers of him who has been so prematurely snatched from us in the prime of a most useful life.

Temperley, Nicholas. Born at Hexham, Northumberland, 1844; died at Gateshead, September 30, 1923. He came to Newcastle in 1863 to manage in the Close a wholesale corn and provision business which belonged to his father. Two years later he became a partner and continued in business at Newcastle till 1908 when he retired. He succeeded to the Presidency of the Tyneside Sunday Lecture Society on the death of its former President, the Right Hon. Thomas Burt. He became much interested in Agricultural Research, was an authority on the early churches of his native country, and was accorded the Gilchrist Medal at Cambridge about ten years ago. He was a member of the Royal Archaeological Society and was a keen member of the local Natural History Society and of the Royal Arboricultural Society, being a member of the Council. He was a frequent attendant at its excursions both in Britain and abroad. He became connected with our Society in 1917. Later, when I made his acquaintance, I found that he had travelled much on the continent, and was interested in Italian Art. Not only had he a good knowledge of the local flora of which from time to time he sent in some interesting notes, but his love for the Alpine plants of Italy and Switzerland was keen to a degree. His public work at Gateshead was much appreciated. He acted as Magistrate for that town for 31 years. His interest in Botany did not end with the higher plants. He was a member of the Mycological Society and attended their meetings and fungus forays. He also belonged to the Moss Exchange Club. He lived a full life and looked much younger than his years.

Wilkes, Rev. William. Born at Ashford, Kent, 1843; died at Shirley, Surrey, 1923. He was educated at Clapham School and Pembroke College, Cambridge, where he graduated in 1866. He acted as Curate at Croydon Parish Church till 1879 when he was appointed Vicar of Shirley. He came of a family interested in

Horticulture and at the early age of 23 he was made a Fellow of the Royal Horticultural Society. In 1881 he was chosen Chairman of the Floral Committee. His great floricultural achievement was the production—after years of careful labour—of the Shirley Poppy. Of this work a notice will be seen under *Papaver Rhoeas* in this *Report*. It is not a hybrid of two species but a selected strain of the Common Red Poppy and forms one of the most pleasing additions to the garden as its range of colours is varied and the texture of its petals is so delightful from their satiny sheen. The stamens, too, differ from the type in being yellow coloured. Indeed its whole appearance is most dainty and pleasing. When the Society was in difficulties in 1888 Mr Wilks came to its aid and reconstructed it, becoming its Honorary Secretary. He lived to see the membership raised from 1000 to 16,000, to see the Society with a large income, a substantial reserve, and a fine Library. He edited its Journal, which contains much matter of value, and many able articles. When he retired from his living at Shirley in 1912 he devoted his time to his favourite pursuit. Latterly he acted as paid Secretary to the Horticultural Society. He gave 25 years' service in that office and on his retirement in 1913 a substantial cheque and a silver salver were presented to him. He was granted a permanent seat on the Council. He died in the house he had built near the Vicarage at Shirley. He was a man of great tact and with excellent business methods. Horticulture has lost a most able exponent and an industrious disciple. He joined our Society in 1918. By his will the ultimate residue of his estate, valued at about £28,000, will eventually go to the Horticultural Society.

Williams, Frederick Newton. Born at Brentford, Middlesex, March 19, 1862; died in the West Middlesex Hospital, Isleworth, March 6, 1923. He qualified as a medical practitioner after studying at University College and St Thomas's Hospital in 1883. He was a good linguist, an accomplished Latin scholar, and possessed a clear, terse style of writing. Known to me for years, I found him a mass, but not unpleasing mass, of contradictions. A surgeon, who made no success at his profession, he allowed the opportunities of making a profitable practice to slip by unheeded. A student of plants, he mainly studied them in the herbarium. He was a most strenuous worker at Kew and could accurately copy out quantities of details, however crabbed the hand and however carelessly written, but he scarcely deigned to look at a growing plant. He yawned when I showed him some of our Oxford treasures, and even some alpine Cerastia in my garden were rapidly passed by. A literary man and a good linguist, he had not read Balzac or Victor Hugo; a Freemason—not of England but of France (what a world of difference that implies); a free-thinker, but fond of ornate ritual; a student, as I have said, of dried plants and of printed floras who got his relaxation but not on the cliffs of the Scottish hills. Holborn Hill was his mountain climb and Piccadilly his inspiration. He was by nature a kindly and friendly person, though his comments on his contemporaries are incisive and, however amusing, are not always of the kindliest. He was a hard worker at a subject for a time, but he did not " carry on " well or we might have had contributions to British Botany of the highest value from his pen. His uncompleted " Prodromus Florae Britannicae," which he began publishing in 1901, is a case in point. There is an enormous amount of laborious compilations from herbarium specimens and from published works, but he used the Latin tongue for its vehicle and thus, at a stroke, cut himself away from a profitable publication and a large clientèle. During the many years of its preparation we had a voluminous correspondence. He was an excellent letter writer, and one could fill a volume of the *Report* with extracts. In the arrangement of his work he follows Engler. Perhaps all of us will eventually be chained to its oars. He refused to admit any descriptions of hybrid plants or those that were not assuredly native. The results were curious. The Mints, of which one reviewer said " the treatment was masterly " only had five species described. So, in that most variable genus, no description is given of a single variety. *M. piperita*, *M. rubra*, *M. verticillata* and *M. gentilis* are therefore ignored so that a very large proportion of individual mints which the botanist would meet with in the field could not be identified correctly if he relied solely upon the Prodromus for assistance. Of course he gives a list of such and other hybrids, but that does not aid in the recognition. Yet under *Plantago maritima* and *Coronopus* a large number of varieties are described but alas not always correctly identified. He mistook, for instance, the Steep

Holme plant for *P. serraria* and the Dorset *ceratophyllon* for *macrorrhiza*. But his literary notes on the histories of the species are extremely valuable and it is to be greatly hoped that the part in MS. which is given to the National Herbarium may some day be published. In his nomenclature he followed no rule or rather he did not follow the International Rules and he boldly wrote *Belladonna trichotoma* instead of *Atropa Belladonna* and *Stramonium foetidum* instead of *Datura Stramonium*. It is quite true that Linnaeus wickedly and wantonly altered Tournefort's names in many cases, but it is too late now to revert to the pre-Linnean names. Williams wrote all the trivial names with a small letter. He adopted *Pervinca* instead of *Vinca* but omits all reference to *V. major* since it is naturalised only. He adopts *Blackstonea* as Hudson originally spelled it. He rightly adopts *Pneumaria* Hill—*Mertensia* ought never to have been included in the nomina conservanda. Curiously *Scrofularia* (as he spells it) *vernalis* is admitted, but it is no more indigenous than *Vinca major*. He uses *Euphrasia officinalis* in the sense of *Rostkoviana* and identifies *E. latifolia* and *foulaensis* as *E. arctica* Lange. But we are developing into a criticism of his British Flora rather than an appreciation of a much valued member. The very differences here mentioned show that Williams was no mere copyist. He had original ideas and often these were, in a high degree, suggestive and not infrequently correct. The Caryophyllaceae was his favourite group. He published an *Enumeratio Specierum Varietatumque Generis Dianthus* from Brentford in 1885, and in 1889 his *Notes on the Pinks of Western Europe*. He was the first to identify the *Dianthus* of Jersey as *D. gallicus*. Our members were delighted to see this growing in May last year at St Ouen's Bay. In the *Journal of the Linnean Society* for 1893 he published a *Monograph of the Genus Dianthus*, in 1896 a *Revision of the Genus Silene*, and in 1898 a *Monograph of the Genus Arenaria* (*excluding Alsine*). Many papers on the same family were published in the *Journal of Botany*, including his discovery of the green foliaged *Stellaria Dilleniana* (223, 1910). This was first published in our *Report*, 413, 1909, as *S. palustris*, var. *viridis*. Babington (*Man.* 58, 1874) says the plant is usually glaucous (thus assuming the existence in Britain of a green foliaged plant). See also *Rep. B.E.C.* 546, 1910. He also contributed to the *Journal of Botany* a valuable paper on a *Critical Study of Ranunculus aquatilis*, var. γ, pp. 11, 44, 1908, in which he kept *Drouetii* and *trichophyllus* distinct species. In 1917 he wrote a *Monograph of the Genus Sagina* as a Supplement for our *Report*. In 1908 he began a valuable contribution on *The High Alpine Flora of Britain* in the pages of the *Annals of Scottish Natural History*, which with additions and corrections we hope at no distant date to republish in our *Report*. He was also a contributor to that excellent, but alas defunct, periodical, the *Bulletin L'Herbier Boissier*, and he wrote in Italian a paper in one of the Botanical journals of that country. His biography of Theodore Caruel (*Journ. Bot.* 258, 1899) is excellently written. There is an able memorial notice by Mr Britten in *Journ. Bot.* 249, 1923. Until the last three years he came to see me occasionally for the week-end, a visit I always enjoyed, for he was a good conversationalist. He steered clear of Botany, whereas in his correspondence he adhered closely to it, interpolating his notes here and there with some attic salt and sometimes with points flavoured with an acidulous radical. In this way he resembled a Master of the Temple who when visiting the Athenaeum uttered mordant epigrams, leaving absent members' characters unassailed. Williams, however, had no personal enmities. His botanical letters were excellent. One such lies before me, written when he was preparing his account of the genus *Thymus* for his *Prodromus*. It will be remembered that in that work he used *T. ovatus* Miller instead of *T. Chamaedrys* which British botanists had for some years misused. In my *List* of 1908 I had revived Miller's name. As will be seen Ronniger in this *Report* has shown that *ovatus* Miller is outdated by *T. pulegioides* L. And he has also stated that *T. lanuginosus* Mill. is British. Williams (Jan. 10, 1910) writes that " he does not want to see my array of *Thymus* as he is not examining more at present. . . . I am afraid a good deal remains to be done with the British forms, and I have but very crude opinions about them at present. Meanwhile I have carefully examined Miller's type-specimen of *T. lanuginosus* in Herb. Brit. Mus. It agrees fairly well with his description, and is a hairy plant without stolons, though not having enough to be called '*lanuginosus*,' though, of course, the indumentum may probably have been rubbed. Still it quite sufficiently agrees with the description. The specimen is not dated, but the locality given

(Forest of Fontainebleau) is that given in the *Gard. Dict.* [but cf. Wilmott in *Journ. Bot.* 136, 1923]. I have not succeeded in matching any British specimen with it [As will be seen Ronniger identifies my Gloucestershire plant as being that species]. He adds, " I found in Herb. Brit. Mus. a specimen from Tongland, Kirkcudbrightshire, which agrees exactly with *Origanum vulgare*, var. *megastachyum* Koch in Mert. & Koch Deutsch. Fl. iv., 304, 1833. Probably it occurs elsewhere. This Scottish specimen exactly matches the excellent plate in Brotéro Phytogr. Lusitan. sel. ii., 91, t. 113, 1827, which might have been drawn from it." In April 1919 he writes saying he is " keeping up *Rubus nessensis* (instead of *suberectus*)." He agrees that it is the earliest correct name. Just before he had sent me a complete list of Middlesex Rubi. This MS. of British Rubi includes 64 sub-species, of which 34 occur in Middlesex. He believes *Arctostaphylos* Sprengel to be a nomen nudum and in the *Prodromus* used *Uva-ursi* (Tourn.) Miller 1754. It may be added that he was the first to draw attention to Miller's *Abridgment of the Gardeners' Dictionary* of that date, which is one of the earliest botanical works published after the first edition of the *Species Plantarum* of 1753. In February 1918 he gives a luminous account of the air-raid when eleven explosive bombs fell on Brentford, killing 10 people and maiming about 50 others; destroying the South Western Railway Station and the Waterworks opposite to the Kew Herbarium. He was also on duty at Covent Garden during the great air-raid. " It was a sickening spectacle. Four explosive bombs had crashed through the lift-shaft of the John Bull Office, tore through three concrete floors, and crashed among the refugees who had crowded below. [Here the details are too awful to quote.] Up to yesterday 57 bodies had been recovered, and there may be a few more buried in the ruins. Poison-gas bombs were certainly used, and the murderous raiders all escaped. I enclose a provisional list of British Orchidaceae with dates to every name—if you care to make use of it pray do so. . . . You will notice that *Ophrys* is cited as of Miller 1754, where it is first used in more or less its current sense. ' *Ophrys* L.' is a hopeless muddle. . . . I quote ' Aiton f.' for several genera as well as many cruciferous ones . . . for the plain reason that throughout the whole of Aiton's *Hort. Kewensis* (both first and second editions) the name of Robert Brown is not once in evidence. . . . You can do what you please about *Sagina.* I have no doubt that it is amenable to correction here and there in details. I should gladly accept your corrections and emendations. *S. Reuteri* is quite stable. . . . My MS. of Orchidaceae (not quite finished) fills 53 pages. It is in the form of later parts of the *Prodromus* but rather fuller in critical notes, with full list of altitudes for all the species, compiled from many sources. [It also contains notices of hybrids]. Watson's altitudes are only taken in default of any others for the same plant, as he had no instrument other than the old-fashioned sympiesometer for accurate measurement, and those of his vertical records I have checked are all too high, including those found (possibly in a balloon) beyond the limits of perpetual snow. There are no limits of perpetual snow in Scotland since the Glacial Period." He then gives me an example of his treatment of a species of Orchid in the *Prodromus*, i.e., "*Cephalanthera rubra.* In woods and bushy places; in Gloucestershire only. First recorded as a British plant on Hampton Common, Gloucestershire, by Mrs Smith of Barnam House in that neighbourhood, *Eng. Bot.* t. 437, 1797, under the name *Serapias rubra.* The specimen in Herb. Brit. from Sowerby's herbarium was used for the figure mentioned, and is labelled Miss (?) G. Smith, Hampton Common, Gloucestershire, 29 June 1797. Syme (*Eng. Bot.* ix., 128, t. 1483, 1869), gives the additional locality of 'Pitchcombe Wood, whence I have been favoured with fresh specimens by Mr G. S. Wintle, and with dried ones by Dr St. Brody, gathered in 1864-65,' the latter also in Herb. Brit. dated 1864. More recent specimens in Herb. Brit. are from Woodchester (Rev. H. P. Reader, 1880) and from Glad (sic) Valley, Stroud (E. M. Day, 1911). In Herb. Watson are also specimens from Pitchcombe Copse (Rev. H. P. Reader, 1879) with a note on the label 'said also to be found at Dursley.' There is no confirmation of the recent occurrence of the plant in the original locality of Hampton Common." On my Orchid paper he adds, "I am sure that the hybrid dilutions of British Orchids are quite different from Continental ones." Again "*Puccianella*" is certainly the correct name for *Atropis.* Parlatore, 1848, gives quite excellent descriptions of all the species in his *Fl. Italiana.* The former name prevails in nearly all N. American Floras, and the correct name of *Glyceria Borreri* Bab. is *Puccianella* *permixta* Parl. *Glyceria rupestris* is an impossible name." Later on he writes, " I had overlooked your lucid note in *B.E.C.* 432, 1916. As you say, of course, it is not a rock-plant at all so the name is not only untenable but erroneous." In December 1918 he says (too severely) of the Linnean species, " they are merely labels and there is no description at all but merely a string of hap-hazard synonyms. I am correcting the errors in my copy of the *Cambridge Flora*. They appear to be interminable." He regards *Festuca elatior* L. as represented in the first edition too vaguely and in the second edition as two (probably more) species, and neither comes up to the Hudsonian standard of clearness. So he adheres to *F. pratensis* Huds. combining with it Syme's *elatior* and making the less common form var. *arundinacea* nobis. Even the Chauvinist Swede, Wahlenberg, *Fl. Upsala*, 1820, suggested the dropping of the Linnean specific *elatior*. " As you have pointed out the case for *Helleborine* is undoubted." He was much interested in the discussion on *Orchis latifolia* (or as he wrote it *latifolius*) and one cannot resist quoting a note on the subject, too incisive as it is. " With all due respect to Mr. . . his brain consists of water-tight compartments. He will twist and hammer and knead together the scattered items of an Orchid and draw inchoate conclusions from the limited data available. But when the next problem presents itself he is quite unable to utilise the last mortar from the last brick, to associate together and co-ordinate the characters of the next brick—or to synthesise the conclusions which a scientific systematist would draw from many sources. For this reason his numerous annotations have little connection with each other, and are frequently mutually contradictory. He cannot see the wood for the trees. As you point out he would look at Gerard's woodcut of *latifolius* but would not go beyond the outline, and it would not occur to him to trace back the origin of the woodcut, or to find out if it had been modified from another which had seen active service. Linnaeus' synonyms frequently afford comic relief to the heavy dullness of his diagnoses. Linnaeus had a number of favourite authors or ' Totems,' others were ' Taboo ' and, therefore, like the ancient church customs, in his references some are to be ' abolished ' and some ' retained.' And so, having made up his mind previously as to the category, when he was perched on his stool at his desk, he was able to limit the number of books to be within reach of his left arm, while his right hand continued to scribble. When both categories failed him he was able to send his assistant secretary or factotum to an adjoining room which contained his herbarium to fetch out a Swedish specimen whereon to base his type description of an European plant of possibly wide variation. [cf. *Orchis maculata*]. Sometimes the factotum brought the wrong sheet of specimens, and sometimes, which was better (or worse) for subsequent reference, stowed it back in the wrong cover (the separate sheets within each cover were not clearly inscribed and rarely numbered).'' In the same year, 1918, he writes to say that *Orchis incarnata*, var. *ochroleuca* is not *O. ochroleuca* of Wüstnei 1854 or of Reichb. 1830, but var. *ochroleuca* Boll. Arch. Fr. Nat. Mecklenb. xiv., 307, 1860 (see Aschers. & Graeb. iii., 720). As regards Orchid genera, '' I view with suspicion the application of all generic names previous to Richard 1888, such as *Epipactis* Haller, which as you say = *Goodyera* 1813, and think that many of them should be scrapped. *Helleborine* is well defined by Tournefort, and is adopted with hardly any modification by Miller in 1754, as you have done.'' One could go on for pages quoting from this huge and most interesting correspondence. The letters were always welcome and suggestive and few genera of British plants were not at some time or other touched on. For the last two or three years the letters had dropped off. I was afraid in some way I had unwittingly annoyed him, but discovered that depression, owing to straitened means and probably failing health, were the cause of their well nigh cessation. The last time I saw him was at the Kew Herbarium where he was getting material for his *Prodromus*, which he was destined never to see published. He suffered from cardiac affection and gangrene, and met his end in a nursing home. His death cut off a career which might have been brilliantly successful. It was the irony of fate that such a workman should be used for uncongenial work. As an endowed student of a great herbarium he might have made a great clearance of useless material, and perchance have prepared a great Vegetable System for the production of which his critical and extensive knowledge were very great assets. One feels intensely sad at his (for a botanist) premature death, and for the saddened conditions by which his later days were surrounded. Personally I owe much to him as a warm supporter of our Society, for his proof-reading, not only for the *Reports* but for the *Adventive Flora of Tweedside*, for his voluminous correspondence, and for his genial and kindly good-fellowship.

NEW COUNTY AND OTHER RECORDS.

ABBREVIATIONS.—*Rep. B.E.C.=Report of the Botanical Society and Exchange Club; Wats. B.E.C.=Report of Watson Botanical Exchange Club; Gar. Chron.=Gardeners' Chronicle; Nat.=The Naturalist; Journ. Bot.=Journal of Botany;* †=Adventive; *=New County Record (in the case of adventive plants this is only rarely added); ! placed after a plant signifies that the compiler has seen a specimen; ! placed after a locality that the compiler has seen it there; × placed between two scientific names means that the plant is a hybrid; 52, &c., numbers following a county, refer to the Watsonian vice-county in *Topographical Botany;* [ ] enclosing a record mean that confirmatory evidence is needed, or that the plant is not British.

17. MYOSURUS MINIMUS L. Between Exmouth and Budleigh Salterton, May 1923. Confirmative of an old record in the *Flora Devoniensis* of 1829, C. W. GARDNER.

22. RANUNCULUS BULBOSUS L., var. DUNENSIS Druce. The members of the Society, on their visit to Jersey in June, paid attention to this form. Although very many specimens were examined, not a cormless plant could be found. There seems good reason to believe that the *R. Aleae* of the *Cambridge Flora* was founded on an abnormal form of this dunal plant which forms a striking feature of the flora, DRUCE. Var. FLORE PLENO. Great Bookham, Leatherhead, Surrey, 1881, C. ORCHARD in *Gard. Chron.* 10, 1923.

23. R. LINGUA L. Gailey Reservoir; Hoar Cross, Stafford, the former an almost glabrous plant, DRUCE and Sir R. CURTIS.

26. R. SCOTICUS Marshall. In several lochs near Loch Erribol, W. Sutherland, DRUCE and WILLIAMSON.

†28. R. SARDOUS Cr. *Bowling Distillery, Dumbarton; Riddings, Lanark, GRIERSON, teste THELLUNG.

31. R. MURICATUS L. Naturalised in the Scillies, Cornwall, DOWNES.

38. R. TRICHOPHYLLUS Chaix, var. RADIANS (Revel). Stream at Elliot, Forfarshire, R. and M. CORSTORPHINE. Det PEARSALL. Var. GODRONII (Gren.). Quarry Pool, Westerton Toll, Auldbar, Forfarshire, R. and M. CORSTORPHINE. Det. HIERN.

41. R. PELTATUS Schrank. Deanscales, Cumberland, TEMPLEMAN. Var. TRUNCATUS (Koch). Kingthorpe Hall, Levisham, N. Yorks, FLINTOFF. Var. PSEUDOFLUITAUS (Newb.) Syme. *River South Esk, near Powmouth, Forfarshire, R. and M. CORSTORPHINE.

42. R. BAUDOTII Godr., var. CONFUSUS (Godr.). Llanelly, Carmarthen, HAMER.

47. R. FICARIA L., flore pleno. The Drum. Midlothian. D. ARMSTRONG in *Gard Chron.* 27, 1923.

†60. DELPHINIUM AJACIS L. Glasgow, GRIERSON. Det. THELLUNG. Buildwas, Salop, MELVILL.

†61. D. ORIENTALE J. Gay. Willoughby Gorse, 2 miles from the malt houses, Sleaford, 1922, Miss LANDON. Det. THELLUNG.

†68. ACONITUM NAPELLUS L. Marwell, S. Hants, Miss WILLIAMS; Sibton Abbey Wood with *Spiraea salicifolia*, *Paeonia* species, and *Helleborus foetidus*, all probably introduced. REDGROVE.

†71. PÆONIA OFFICINALIS (L.) Gouan. Corstorphine Hill, Edinburgh, BELL.

77. CASTALIA ALBA Link, var. OCCIDENTALIS (Ostenf.). Altnaharra, W. Sutherland; Achiltibouie, W. Ross, DRUCE.

†*79. PAPAVER SOMNIFERUM L. In potato field, Kyle of Loch Alsh, W. Ross; Bonar Bridge, E. Ross, DRUCE.

80. P. RHOEAS L., var. STRIGOSUM Boenn., var. PRYORII Druce. Christchurch, S. Hants, Miss S. G. ROOKE.

†90. GLAUCIUM CORNICULATUM Curt. Christchurch, S. Hants, Mrs ROTHWELL and RAYNER.

†91. ROEMERIA HYBRIDA DC. Cardiff, Glamorgan. Det. THELLUNG.

†95. HYPECOUM PROCUMBENS L. Cardiff, Glamorgan. Det. THELLUNG.

†97. CAPNORCHIS FORMOSA (Walp.). One clump in a wood, West Bergholt, N. Essex, Miss FROST, *ex* G. C. BROWN.

†98 (2). C. CANADENSIS (DC.) Druce. Millom, Cumberland, Mrs MASON.

104. FUMARIA CAPREOLATA L., var. BABINGTONII Pugsl. Falmouth, Cornwall, Miss TODD.

106. F. PURPUREA Pugsl. Between Ilfracombe and Chambercombe, N. Devon, 1891, as *pallidiflora*, BAILEY.

107. F. BORAEI Jord. Melmerby, Cumberland, Rev. W. W. MASON.

108. F. MURALIS Sond. Trigoney, E. Cornwall (Miss Todd's locality), Mrs WEDGWOOD; probably this, teste PUGSLEY, from Bradninch, N. Devon, Lady DOUIE.

109. F. BASTARDI Jord. Corfe, Dorset; *Scascale, Cumberland DRUCE; Glamorgan, WEBB; Lizard, Cornwall, Miss TODD.

110. F. OCCIDENTALIS Pugsl. Housel Bay, Cornwall, 1923, Miss TODD.

122. RADICULA NASTURTIUM Druce, var. MICROPHYLLA (Reichb.)

Druce. Galway, Mrs Evans. Particularly abundant in 1923 and often a conspicuous feature, as near Witney, Oxford, Druce.

124. R. sylvestris Druce. Fordham, Cambridge, H. K. A. Shaw.

†131. Barbarea intermedia Bor. Aldbourne, Wilts, Miss Todd.

†132. Arabis Turrita L. Christchurch, S. Hants, Miss S. G. Rooke.

142. Cardamine pratensis L., flore pleno. Rather plentiful about Port Eynon, Glamorgan, Miss Phoebe Symons.

†*144. C. impatiens L. In the High School Grounds, Sleaford, Lincoln, Miss Landon.

145. C. flexuosa With. Woodbridge, E. Suffolk, H. K. A. Shaw. It is still a desideratum for W. Suffolk.

†149. Lunaria rediviva L. Hedge, Llanyfelach, Glamorgan, Webb.

†150. L. annua L. Haverford West, Pembroke, Druce.

†*162. Draba muralis L. On a cottage garden wall at North Aston, Oxford, H. Powell. Confined to this one place in the county for which it is a new record. I could find no clue to its introduction. The tenants had been in the cottage for many years. In great quantity in a wood clearing, Wye Downs, E. Kent, Miss M. Cobbe. New to Kent, but doubtless adventive. In a Nursery at Winchester, 1923, adventive, Druce.

†176. Hesperis matronalis L. Near Banbury, on a railway siding, (?)Northants, Lamb; abundant in Heythrop Park, Oxon, Druce; Hinton, S. Hants, J. Voise.

†184. Sisymbrium altissimum L. A very tall specimen at Ashstead, Surrey, Miss Wilkinson; Carmarthen, Hamer; Aldbourne, Wilts, Miss Todd; Silloth, Cumberland, Druce; Ruswarp, Thornton Dale, N. Yorks, Flintoff; betwcen Henton and Shefford, Beds,

WILD FL. SOCIETY. Var. RIGIDULA Thell. Hull Docks, Yorks, Miss M. COBBE.

†185. S. ORIENTALE L. Galway, Mrs EVANS; Bullingdon, Oxon; Silloth, Cumberland, DRUCE; Bitterne, S. Hants, RAYNER.

†187. S. LOESELII L. Bristol, Mrs SANDWITH. Det. THELLUNG. Oil Works, Hull, Miss M. COBBE.

†188. S. IRIO L. Barry, Glamorgan, R. L. SMITH.

†191. S. POLYCERATIUM L. Bristol, N. SANDWITH.

†198. ERYSIMUM REPANDUM L. Ware, Herts, Mrs WEDGWOOD; South Stoke, Oxon, DRUCE; Leverton, Lincoln, Rev. W. W. MASON; Christchurch, Hants, Mrs ROTHWELL and RAYNER. Det. THELLUNG.

†200. CONRINGIA ORIENTALIS Dum. Basingstoke, N. Hants, BOYS; Bitterne, S. Hants, RAYNER; Lichfield, Staffs, DRUCE and Sir R. CURTIS; Edenhall, Cumberland, GAMBIER-PARRY.

†201. C. AUSTRIACA Sweet. Builth, Brecon, Hon. Mrs A. LEITH.

†203. CAMELINA SYLVESTRIS Fries. Llanelly, Carmarthen, HAMER. Det. THELLUNG.

†211. BRASSICA CHEIRANTHOS Vill. Radyr, Glamorgan, R. L. SMITH. Det. THELLUNG.

†*215. B. NIGRA Boiss. Dumbarton, GRIERSON.

†218. B. JUNCEA Coss. Between Truro and Malpas, Cornwall; Penarth, Glamorgan, STORRIE; Headington, Oxon; Lichfield, Staffs, DRUCE; Galway, Mrs EVANS. Det. THELLUNG.

†222. B. GALLICA (Willd.) Druce. Christchurch, S. Hants, Miss S. G. ROOKE.

†224. B. INCANA Schultz. *Abundant throughout the Isle of Thanet, E. Kent, Miss M. COBBE; Grange Town, Glamorgan, WADE; Barry, Glamorgan, R. L. SMITH.

226. DIPLOTAXIS TENUIFOLIA DC. †*Above Ystalyfera, Brecon, J. A. WEBB; very abundant throughout Thanet, Miss M. COBBE.

†227. D. MURALIS DC. Hoar Cross, Staffs, DRUCE and Miss D. MEYNELL; on railway near Grosmont, N. Yorks, FLINTOFF.

†228 (2). ERUCA CAPPADOCICA Reut. Flaxfield, Upper Swell, Gloster, v.-c. 33, Mrs C. WILDE, teste THELLUNG.

232. BURSA ANGLICA (At.). Par, Cornwall, Miss TODD; Swanage, Dorset; Byfleet, Surrey; Biddesden, Wilts, DRUCE.

232. B. BATAVORUM (At.). Freshwater, Isle of Wight; Frilford, Berks, DRUCE; Godalming, Surrey, RAYNER.

232. B. BRITTONII (At.). N. Stoneham, S. Hants, RAYNER; Martyr Worthy, N. Hants; Hoar Cross, Staffs, DRUCE.

232. B. DRUCEANA (At.). N. Stoneham, RAYNER; near Cambridge; Tenby, Pembroke; Pontac, Jersey; Yardley Gobion, Northants; Kemble, N. Wilts; Westonbirt, Gloster, DRUCE; Mevagissey, Cornwall [No. 1], Miss TODD.

232. B. GALLICA (At.). Hanslope and Lacey Green, Bucks; Ashton, Northants; Silloth, Cumberland; these may have come with other aliens, DRUCE; Syston, Leicester, HORWOOD.

232. B. GERMANICA (At.). Pentewan, Cornwall [No. 2], Miss TODD; Bidston, Cheshire; Banbury, Oxon, DRUCE.

232. B. LAEVIGATA (At.). Sibford, Oxon, DRUCE; Colchester [No. 1946], Essex, BROWN.

232. B. MEDITERRANEA (At.). Silloth, Cumberland, DRUCE.

232. B. ORIGO (At.). Christchurch, S. Hants, RAYNER.

232. B. PATAGONICA (At.). Kew, Surrey [No. 5], Miss TODD.

232. B. TREVIRORUM (At.). Sibford, Oxon, DRUCE; N. Stoneham, S. Hants, RAYNER.

232. B. TURONIENSIS (At.). Par [Nos. 3 & 4], Cornwall, Miss TODD; Corbière, Jersey; Tenby, Pembroke; Tipton, Staffs, DRUCE.

233. CORONOPUS DIDYMUS Sm. Little Faringdon, Berks, F. STONE; *Woodbridge Station, E. Suffolk, H. K. A. SHAW.

†235. LEPIDIUM GRAMINIFOLIUM L. Near Warlingham, Surrey, A. BEADELL; Barry Docks, Glamorgan, R. L. SMITH.

†237. L. DRABA L. Cladagh, Galway, Mrs EVANS.

†239. L. PERFOLIATUM L. Sandy, Beds, Hon. S. PEEL; Colwyn Bay, Denbigh, BOYDON RIDGE.

†240 (2). L. NEGLECTUM Thell. Bristol, N. SANDWITH; Riddings, Coatbridge, Lanark, GRIERSON. Det THELLUNG.

246. L. SMITHII Hook. Still at Leafield, Oxon, H. POWELL.

†247 (4). L. DENSIFLORUM Schrad. By Newton Abbot Canal, S. Devon, C. E. REYNOLD; Woodbridge, E. Suffolk, H. K. A. SHAW; Christchurch, S. Hants, Mrs ROTHWELL & RAYNER; Hertford, DRUCE & Miss TROWER; Glasgow, Lanark, GRIERSON. Det. THELLUNG.

†247 (5). L. BONARIENSE L. Swaythling, S. Hants, RAYNER. Det. THELLUNG.

250. THLASPI PERFOLIATUM L. On a wall, plentifully, at Frampton Gloster, Miss D. CATOR.

†253. IBERIS UMBELLATA L. Railway bank, Achterneed, E. Ross, WEBB.

†258. VOGELIA PANICULATA Horn. Near Basingstoke, N. Hants. BOYS.

†260. MYAGRUM PERFOLIATUM L. Carmarthen, HAMER. Det. THELLUNG.

†268. RAPISTRUM RUGOSUM All. Hayle, Cornwall, Miss TODD. Det. THELLUNG; Galway, Mrs EVANS.

†269. R. LINNAEANUM Boiss. & Reut. Grosmont, N. Yorks, FLINTOFF. Det. THELLUNG.

275. RAPHANUS MARITIMUS Sm. Cladagh, Galway, Mrs EVANS.

281. RESEDA ALBA L. Christchurch, S. Hants, Miss S. G. ROOKE.

293. VIOLA SYLVESTRIS Kit., var. PUNCTATA Druce. Baydon, Wilts, Miss TODD. Var PSEUDOMIRABILIS Greg. Braemar, S. Aberdeen, DRUCE.

*295. V. RUPESTRIS Schm., var. GLABRESCENS Neum. Oxwich Bay, Glamorgan, DRUCE. Det. Mrs GREGORY. Near Brackley, Northants, DRUCE. V. RUPESTRIS or perhaps × CANINA, var. GLABRESCENS. Cnochan, W. Ross, DRUCE.

296. V. CANINA L., var. PUSILLA. Caenlochan, Forfar, DRUCE. Var. LANCEOLATA. East Dereham, Norfolk, Mrs RUSSURIM. Det. Mrs GREGORY. Var. CALCAREA. Lancresse, Guernsey. KING.

298. × V. SEPINCOLA Jord. Sydmonton, N. Hants, Miss TODD.

*300. V. CALCAREA Greg. In a calcareous pasture, with *Potentilla verna*, at Ledstone Park, Leeds, N. W. Yorks, W. A. SLEDGE. Det. Mrs GREGORY.

*303. V. LEPIDA Jord. Side of Wick River, Caithness, DRUCE, teste DRABBLE; Stromness, Orkney, JOHNSTON in *Trans. Bot. Soc. Edin.* 102.

*303. V. VARIATA Jord. Chippenham, Cambridge [aa. 297]; Charlbury, Oxon, DRUCE.

304. V. OBTUSIFOLIA Jord. Lizard, Penteway, Cornwall, Miss TODD, teste DRABBLE.

304. V. SEGETALIS Jord. St Anne's on Sea, W. Lancs, C. BAILEY, as *arvensis*, teste DRABBLE; Dolgelley, Merioneth, BARTON.

304. V. RURALIS Jord. Stokenchurch, Oxon; Frilford, Berks [aa. 224], DRUCE, teste DRABBLE.

306. V. Curtisii Forst. Sandy coasts of Down and Antrim, S. B. Bennett.

306. V. Pesneaui Lloyd. *Bissell Wood, Churchill, near Kidderminster, Worcester, C. Rea. An excellent N.C.R. *Dunnet Links, Caithness, Druce; Sanday, Orkney, Johnston.

310. Polygala dubium Bellynck. West Ilsley, Berks; Princes Risborough and Ivinghoe, Bucks, Druce; Fritchley, Derby, 1900, W. R. Linton, as *oxyptera*. To this Mr C. E. Salmon refers a specimen determined by Herr Freyn as *P. serpyllacea*, var. *mutabilis* from Aberfraw, Anglesey, gathered by me in 1899, Druce.

†327. Gypsophila porrigens Boiss. Bristol, N. Sandwith.

†330 (2). G. elegans Bieb. Bullingdon, Oxon, Druce; Riddings, Lanark, Grierson. Det. Thellung.

†331. Saponaria Vaccaria L. Honor Oak, London, 1923, L. B. Langmead; Patshull, Staffs, Lady J. Legge; Elliott Common, Thornton Dale, N. Yorks, Flintoff.

†332. S. officinalis L. Bank on moor, Grudie, E. Ross, Webb.

336. Silene inflata Sm. Sandwick, Orkney, Johnston, *l.c.*

†336. S. brachiata Jord. Silloth, Cumberland, Druce.

†338. S. conica L. In immense quantity, in lucerne field, Frilford, Berks, specimens distributed this year, Druce; Barry, Glamorgan, R. L. Smith.

†341. S. dichotoma Ehrh. Cardiff, Glamorgan, Miss Vachell.

†350 (2). S. stricta L. Glasgow, Grierson. Det. Thellung.

359. Lychnis alba Mill., with green flowers. Radyr, Glamorgan, R. L. Smith.

367. Cerastium arvense L. Barry, Glamorgan, R. L. Smith;

Forfar, as a form with narrower leaves than the English plant, DRUCE & Lady DAVY.

370. C. VULGATUM L., var. NEMORALE Uechtr. Penygroes, Carnarvon, Miss TODD. Var. SERPENTINI. Ivinghoe Beacon, Bucks, P. RICHARDS.

372. C. PUMILUM Curt. Borth, Glamorgan, CUMMING; in great quantity, and in good flower, on Furzy Lynam, near Stanton St John, Oxon, 1923, DRUCE.

373. C. SEMIDECANDRUM L. A luxuriant, large-leaved plant at Byfleet, Surrey, Lady DAVY.

374. C. TETRANDRUM Curt., forma CONGESTUM Druce. Tenby, Pembroke, DRUCE.

*380. STELLARIA NEGLECTA Weihe. On gravel, near the Cynon, between Hirwain and Lhwydcleod, Brecon, WEBB; as *umbrosa*, *wood at Gloddaeth, Carnarvon, PUGSLEY in *Journ. Bot.* 19, 1923.

†387. ARENARIA BALEARICA L. Roadside near Clapham, York, J. N. FRANKLAND; near Bradford, York, CRYER; dry hedge, Falmouth, Cornwall, ex THURSTON.

394. A. TENUIFOLIA L. Plymouth District, *Journ. N. H. Soc. Torq.* 57, 1923.

403 (2). SAGINA SCOTICA Druce. Caenlochan, Forfar. Plants grown for many years in my garden at Oxford, continued in flower till November last year, DRUCE.

406. S. APETALA L. Woodhall Spa, Lincoln, ALSTON; an eglandular form, with pedicels shorter than calyx, flowers often nearly sessile, sepals blunt, Lessnes Woods, Belvedere, Kent, St J. MARRIOTT. Var. PROSTRATA S. Gibs. Aldbourne, Wilts, Miss TODD.

407. S. MARITIMA Don. Shoreham, Sussex, Lady DAVY; Fowey, Cornwall, Miss TODD. Var. PROSTRATA Towns. On clinkers at Fishguard, Pembroke, DRUCE.

408. S. PROCUMBENS L. A double-flowered form at Littlestone, Kent, Lady DAVY.

*410. SPERGULA SATIVA Boenn. Dolgelley, Merioneth, BARTON.

413. SPERGULARIA SALINA Presl. In an inland situation near Tixhall, Staffs, Sir R. CURTIS & Father READER.

415. S. RUBRA Presl. A robust form at Radyr, Glamorgan [No. 47], R. L. SMITH; Charleston, Cornwall, Miss TODD.

†418. CLAYTONIA ALSINOIDES Sims. Ulleswater, Westmorland, Countess of CARLISLE.

421. MONTIA VERNA Neck., var. INTERMEDIA (Beeby) Druce. St Brelade's, Jersey; Dolgelley, Merioneth, BARTON.

†428. HYPERICUM CALYCINUM L. Near the railway above Plockton, W. Ross, WEBB.

†438. H. LINARIIFOLIUM Vill. As an adventive near Buildwas, Salop, W. B. ALLEN & J. C. MELVILL.

443. ALTHAEA HIRSUTA L. Although so very abundant near Headington last year, the same locality, which had remained undisturbed, afforded not a single plant in 1923.

†445. LAVATERA CRETICA L. Between Truro and Malpas, Cornwall, 1922, Miss TODD. Det. THELLUNG.

†449. L. TRIMESTRIS L. Grosmont, N. Yorks, 1922, TAYLOR, ex FLINTOFF. Det. THELLUNG. Near Colchester, N. Essex, F. J. SMITH.

452. MALVA SYLVESTRIS L., var. ACUTILOBA Celak. Whitchurch, Hereford, Miss TODD; Barry, Glamorgan, R. L. SMITH.

†454. M. PUSILLA With. Near Great Oakley, N. Hants, Dr D. SCOTT; Morecambe, Lancashire, WHELDON; Maryburgh, Lanark, GRIERSON. Det. THELLUNG.

†462. TILIA TOMENTOSA Moench. Between Egton and Egton Bridge, N. Yorks, FLINTOFF.

†463. T. PLATYPHYLLOS Scop. Sibford, Oxon, DRUCE.

†465. T. ULMIFOLIA Scop. Blymill, Staffs, DRUCE & Sir R. CURTIS; Sibford, Oxon, DRUCE.

†473. GERANIUM MACRORRHIZUM L. Still growing on walls at Postbridge, Dartmoor, Devon, H. DOWNES.

*474. G. SANGUINEUM L., var. LANCASTRIENSE With. Seascale, Cumberland, TEMPLEMAN, and noticed there in 1923 by Dr HELLON & DRUCE.

†475. G. VERSICOLOR L. Vicholez, le Haut, Jersey, BOT. SOC. EXP.

†476. G. NODOSUM L. Raglan, Glamorgan, WEBB.

477. G. SYLVATICUM L., sub-var. ROSEUM Druce. Braemar, S. Aberdeen, DRUCE.

†479. G. PHAEUM L. Langley, Bucks, 1922, GWATKIN; Kirkby-under-Wood, near Bourne, Lincoln, Miss LANDON.

†479 (2). G. ENDRESSI Gay. Near Warlingham, Surrey, BEADELL.

481. G. PYRENAICUM Burm. f. Raglan, Glamorgan, 50 years since last record, WEBB.

483. G. ROTUNDIFOLIUM L. Abundant at West Caistor, E. Norfolk, REYNOLDS. Var. ALBUM. Near Galway, Mrs EVANS.

487. G. LUCIDUM L. Rocks, Ythan Valley, at Woodhead, Fyvie, N. Aberdeen, Rev. F. TURREFF.

488. G. ROBERTIANUM L., *var. HISPIDUM Druce. Deep Dale, Buxton, Derby, DRUCE. An interesting extension of its range.

Berry Head is its only other recorded place of growth. Var. RUBRICAULE Horn. Norman Bay, Sussex, H. L. GREEN.

*497. ERODIUM LEBELII Jord. Llanfairfechan, Carnarvon, PUGSLEY in *Journ. Bot.* 20, 1923.

497 (2). E. PIMPINELLIFOLIUM Sibth. Near Potterne, Wilts, GWATKIN; St Aubin's, St Ouen's, Jersey, DRUCE; Christchurch, S. Hants, RAYNER.

503. LIMNANTHES DOUGLASII Hook. Near Brighton, Sussex, Miss COTTIS; Medstead, on a common near Alton, Hants, Miss M. L. WILLIAMS.

†505. OXALIS CORNICULATA L. Cerist railway track, Merioneth, BARTON. Var. PURPUREA Parl. Bempton Lane, Bridlington, N. Yorks, FLINTOFF.

†506. O. STRICTA L. Swaythling, S. Hants, RAYNER.

†511. IMPATIENS BIFLORA Walter. River Stour, S. Hants, Miss S. G. ROOKE.

†512. I. PARVIFLORA DC. Right bank of Severn, Worcester, HAMER.

†513. I. GLANDULIFERA Royle. Patshull, Staffs, Lady J. LEGGE; by a brook at Lindfield, Sussex, Miss COTTIS; Dolgelley, Merioneth, BARTON.

518. RHAMNUS FRANGULA L. Near Bonskied House, E. Perth, WEBB.

*519. R. CATHARTICUS L. Lough Neagh, Co. Down, STELFOX in *Irish Nat.* 96, 1923.

†522. VITIS HEDERACEA L. In plenty on a tip, Bayswater Lower Sketty, Glamorgan, WEBB.

The adventive species of Leguminosae have been determined by Dr Thellung.

†531. LABURNUM ANAGYROIDES Med. Near Blair Athol, E. Perth; Strathpeffer, E. Ross, WEBB.

†532. L. ALPINUM Presl. Frequent in woods near Pitlochry, E. Perth; in Blackmur Wood, E. Ross, WEBB.

540. CYTISUS SCOPARIUS Link, var. PROSTRATUS (Bailey) Druce. Near St David's, Pembroke, GREEN, ex ARNETT.

†540 (2). C. MONSPESSULANUS L. Naturalised at Budleigh Salterton, S. Devon, Commander WALKER.

547. TRIGONELLA M. ORNITHOPODIOIDES (DC.) Druce. Borth, Glamorgan, CUMMING.

†550. T. HAMOSA L. Londonderry, DRUCE.

†551. T. MONSPELIACA L. Bristol, N. SANDWITH.

†552. T. CORNICULATA L. Barry, Glamorgan, R. L. SMITH.

†555. T. BESSERIANA Ser. Between Truro and Malpas, Cornwall, Miss TODD.

†562. MEDICAGO FALCATA L. East Moor, Cardiff, Glamorgan, Miss VACHELL; Christchurch, S. Hants, Mrs ROTHWELL & RAYNER; Silloth, Cumberland, DRUCE. Var. TENUIFOLIOLATA Vuyck. Bowling, Dumbarton, GRIERSON.

†564 (2). M. VARIA Mart. Silloth, Cumberland, DRUCE & WILLIAMSON.

†566. M. ORBICULARIS All. Radyr, Glamorgan, R. L. SMITH.

†571. M. TRIBULOIDES Desr. Bristol, N. SANDWITH.

†572. M. TRUNCATULA Gaertn. Cardiff, Glamorgan, R. L. SMITH.

†574. M. TUBERCULATA Willd. Dewsbury, York, H. BROOKE.

†575. M. MUREX Willd. Radyr, Glamorgan, R. L. SMITH.

†576. M. ACULEATA Gaertn. Cardiff, Glamorgan, R. L. SMITH.

†579. M. HISPIDA Gaertn., var. APICULATA (Willd.). Cardiff, Glamorgan, R. L. SMITH.

†581. M. MINIMA Desr. Radyr and Barry, Glamorgan, R. L. SMITH. Var. LONGISETA DC. (RECTA Willd.). Wye, Kent, Miss A. B. COBBE.

†595. MELILOTUS ALBA Desr. Teigngrace, Devon, Mr TREGALE in *Trans. Dev. Ass.*, 1922.

†596. M. ARVENSIS Wallr. Silloth, Cumberland, DRUCE.

†597. M. INDICA All. At Countess Wear, S. Devon, 4½ feet high, D'URBAN; Frilford, Berks, very fine, DRUCE.

599. TRIFOLIUM PRATENSE L., var. PARVIFLORUM Bab. Ufford, Suffolk, H. K. A. SHAW; with crimson calyces, Hayling, S. Hants, Miss HILLARD.

†603. T. CHERLERI L. Radyr, Glamorgan, R. L. SMITH.

†606. T. ANGUSTIFOLIUM L. Barry Docks, Glamorgan, R. L. SMITH.

†608. T. INCARNATUM L., var. STRAMINEUM Presl. Odiham, N. Hants, DRUCE.

611. T. ARVENSE L., var. STRICTIUS Koch. Frilford, Berks, DRUCE; St Helens Spit, Isle of Wight, Miss PALMER. Var. LONGISETUM Boiss. Radyr, Glamorgan, R. L. SMITH.

619. T. STRIATUM L., var. ERECTUM Gasp. Near Launceston, Cornwall, W. WISE; Hothfield, Kent, Miss A. B. COBBE.

621. T. FRAGIFERUM L. Between Speeton Raome and Keighley Gap, N. Yorks, FLINTOFF.

†622. T. RESUPINATUM L. Wye, Kent, Miss A. B. COBBE;

Barry Docks, Glamorgan, R. L. SMITH; Christchurch, S. Hants, Mrs ROTHWELL & RAYNER.

†623. T. TOMENTOSUM L. Bristol, N. SANDWITH.

†628. T. REPENS L., var. PHYLLANTHUM Ser. Rottingdean, Sussex, Miss COTTIS.

†629. T. MICHELIANUM Savi. Christchurch, S. Hants, Mrs ROTHWELL & RAYNER.

632. T. GLOMERATUM L. Very luxuriant (15 inches high) at St Ouen's, Jersey, DRUCE; Woodbridge, E. Suffolk, H. K. A. SHAW; Christchurch, RAYNER & Mrs ROTHWELL.

633. T. SUFFOCATUM L. Extremely luxuriant at Hayling Isle, S. Hants, this year, Miss HILLARD; Woodbridge, Suffolk, H. K. A. SHAW.

†645. LOTUS EDULIS L. Radyr, Glamorgan, R. L. SMITH.

646. L. ULIGINOSUS Schkuhr, var. GLABER Bréb. Dovey, Cardigan; Dolgelley, Merioneth, BARTON; Melmerby, Cumberland, Rev. W. W. MASON.

648. L. TENUIS W. & K. Ellerburn Bank, Thornton Dale, N. Yorks, FLINTOFF.

†651. GALEGA OFFICINALIS L. Cardiff, Glamorgan, Miss VACHELL.

†656. ASTRAGALUS HAMOSUS L. Radyr, Glamorgan, R. L. SMITH.

†666. CORONILLA VARIA L. Grosmont, N. Yorks, FLINTOFF.

†669 (2). ORNITHOPUS ROSEUS Dufour. Abundant and luxuriant at Pyrford, Surrey, Miss MILLER and Lady DAVY. Distributed this year.

670. O. PINNATUS Druce. In four of the Scilly Islands. It likes twining itself among dead shoots of heather, H. DOWNES.

†676. CICER ARIETINUM L. Barry, Glamorgan, R. L. SMITH.

†678. VICIA TENUIFOLIA Roth. Near Warlingham, Surrey, BEADELL; Dewsbury, Yorks, H. BROOKE. Det. THELLUNG.

†681. V. VILLOSA Roth. Penarth, Glamorgan, WADE; Warlingham, Surrey, BEADELL; Christchurch, S. Hants, Mrs ROTHWELL and RAYNER. Det. THELLUNG.

†683. V. DASYCARPA Ten. Warlingham, Surrey, BEADELL; Bristol, Mrs SANDWITH; Radyr, Glamorgan, R. L. SMITH; Sleaford, Lincs, Miss LANDON; Swaythling, S. Hants, RAYNER. Det. THELLUNG.

†684. V. PSEUDOCRACCA Bert. Radyr, Glamorgan, [n. 30], R. L. SMITH. Det., as probably this, THELLUNG.

†686. V. CALCARATA Desf. Bristol, Mrs SANDWITH. Det. THELLUNG.

†687. V. BITHYNICA L. Radyr, Glamorgan, R. L. SMITH; Woking and Weybridge, Surrey, Lady DAVY; the Scillies, H. DOWNES; Henfield, Sussex, Miss COTTIS.

688. V. SEPIUM L., var OCHROLEUCA Bast. Between Nailsworth and Kingstoke, Gloster, J. H. ADAMS; Wymondham, Norfolk, Miss POMEROY.

†690. V. NARBONENSIS L. Near Warlingham, Surrey, BEADELL. Var. SERRATIFOLIA Jacq. Bristol, Mrs SANDWITH; Barry, Glamorgan, R. L. SMITH.

691. V. LUTEA L. At Sand Flatts, Thornton Dale, Yorks, FLINTOFF.

698. V. ANGUSTIFOLIA Reich., var. ALBA. Cliff at Kettleness, N. Yorks, FLINTOFF.

700. V. LATHYROIDES L., var. ROBUSTA. Ampthill, Beds, DRUCE.

†707. LENS CULINARE Med. Woodbridge, E. Suffolk, H. K. A. SHAW.

712. LATHYRUS MARITIMUS Big. Between Whitstable and Herne Bay, Kent, Miss A. B. COBBE.

†718. L. HIRSUTUS L. In a field near Rousse Tower, Guernsey, TRAPNELL; sand flats, Thornton Dale, N. Yorks, FLINTOFF; Woking, Surrey, Lady DAVY.

†721. L. CICERA L. Radyr, Glamorgan, R. L. SMITH. Forma ANGUSTIFOLIA Thell. Bristol, N. SANDWITH.

†726. L. APHACA L. Barry Docks, Glamorgan, R. L. SMITH.

737. PRUNUS AVIUM L. Contin, etc., E. Ross; Gareloch, Tallodale, etc., W. Ross, WEBB.

†745. SPIRAEA DOUGLASII Hook. Sand pits, near Boxhill, Surrey, SALT; Contin, E. Ross, WEBB.

The Rubi have been determined by Rev. H. J. Riddelsdell.

*776. RUBUS MERCICUS Bagn. Stanway, N. Essex, BROWN.

794. R. COLEMANNI Blox. Near Cannock, Staffs, DRUCE.

*810. R. MUCRONATUS Blox. Parson's Heath, Colchester, N. Essex, BROWN.

*814. R. VESTIFORMIS Rogers. By the road between Kilsby and Daventry, H. J. RIDDELSDELL in *Rugby Rep.*, 1923.

*815. R. RADULOIDES Rogers. High woods, Colchester, N. Essex, BROWN.

*822. R. LEYANUS Rogers. With above, BROWN.

*857. R. KOEHLERI W. & N., var. COGNATUS N.E.Br. Berechurch, N. Essex, BROWN.

*861. R. VIRIDIS Kalt. With above, BROWN.

†878. R. SPECTABILIS Pursh. Burn of Laro, Rousey, Orkney, H. H. JOHNSTON.

†887. FRAGARIA CHILOENSIS Duch. Escape in many places in E. Norfolk, B. REYNOLDS.

†896. POTENTILLA INTERMEDIA L. Silloth, Cumberland, DRUCE; Leckwith, Glamorgan, R. L. SMITH.

901. P. REPTANS L. A small form, with narrow, non-contiguous petals, Colwyn Bay, Denbigh, BOYDON RIDGE. Var. MOLLIS Borbas. Crabbe, Jersey, *Bot. Soc. Exp.*

†906. P. NORVEGICA L. Christchurch, S. Hants, Mrs ROTHWELL and RAYNER.

909. ALCHEMILLA ALPESTRIS Schm. Cortachy, Forfar, with A. MINOR Huds. and A. PRATENSIS Schm., DRUCE; the last at Dolgelley, Merioneth, BARTON.

*910. A. ARGENTEA Don. By the roadside near Honeybarrel, Kildrummy, N. Aberdeen, " not a garden outcast," W. WILSON.

†915. AGRIMONIA AGRIMONOIDES L. Quite naturalised and established near Welbeck, Notts, GOULDING.

†918. POTERIUM POLYGAMUM W. & K., var. STENOPHYLLUM. Orecombe Cliff, Exmouth, S. Devon, D'URBAN.

The Roses have been determined by Col. A. H. Wolley-Dod.

*926. ROSA GLOBULARIS Franch. Lorton, Cumberland, DRUCE.

928. R. ANDEGAVENSIS Bast. Sibford, Oxon, untypical, DRUCE.

*932. R. HEMITRICHA Rip. Gailey Reservoir, Staffs; near Dunstable, Beds, DRUCE.

934. R. GLAUCA Vill., var. SUB-CANINA Christ. Binscarth, Orkney, JOHNSTON, *l.c.*

935. R. CORIIFOLIA Fries, *var. PRUINOSA W.-Dod. Glen Lyon, M. Perth, DRUCE.

939 (2). Group ACICULATAE. Helpstone, Northants, [n. 2414], DRUCE.

940. R. CARIONII Rip. Horsepath, Oxon, DRUCE.

941. R. TOMENTOSA Sm., *var. PSEUDOCUSPIDATA Rouy. Lorton, Cumberland; Chinnor Hill, Oxon, DRUCE. *Var. FOETIDA (Bast.). Llanberris, Carnarvon, Miss TODD.

942. R. OMISSA Déség. Kingston Hill, Oxon, DRUCE. Var. RESINOSOIDES Crép. Rousay, Orkney, JOHNSTON, *l.c.*

943. R. MOLLIS Sm., var. CAERULEA (Woods). Stockton-on-Tees, Durham, J. E. NOWERS; *var. GRENIERII (Déség.). Glen Lyon, M. Perth, DRUCE.

950. R. PIMPINELLIFOLIA L., var. ROSEA. St Ouen's Bay and Quenvais, Jersey, DRUCE.

†952 (2). R. RUGOSA Thunb. Mead Moor Woods, Gower Penrice, Glamorgan, WEBB; Cover Wood, Gomshall, Surrey, Miss A. COTTIS; near Alness; gravel pit at Stittenham, E. Ross, WEBB.

*954. PYRUS COMMUNIS L. La Moye Point, Forest, Guernsey, TRAPNELL.

†959. P. INTERMEDIA Ehrh., agg. Llanberis, Carnarvon, Miss TODD.

966. CRATAEGUS MONOGYNA Jacq., var. INCISIFOLIA Druce, Gailey Reservoir, Staffs; near Salford, Beds, DRUCE. Var. QUERCIFOLIA Loud. Naworth, Cumberland; Gailey Reservoir, Staffs, DRUCE.

967. C. OXYACANTHOIDES Thuill., with large, feebly lobed leaves, Hallilin Farm, Chelsham, Surrey, BEADELL. Var. ERIOCALYX Druce. Darenth, Kent, St. J. MARRIOTT.

†972. COTONEASTER MICROPHYLLA Wall. Roadside near Stow on the Wold, Gloster, BUTCHER; Pitlochry, E. Perth, WEBB; Brean Down, near Somerset, TRAPNELL.

†972 (2). C. SIMONSII Baker. Near Ridge, Dorset, in hedge far from houses, DRUCE and VAN DE WEYER.

†972 (3). C. FRIGIDA Lindl. Twenty feet high at Thatcham, Sussex, F. R. BROWNING, ex Miss COTTIS.

†991. SAXIFRAGA GEUM L. Woods and side of stream, Fyvie, N. Aberdeen, Rev. F. TURREFF.

†992. S. ROTUNDIFOLIA L. Naturalised on a bank of the burn between Campsie and Strathblane, Stirling, GRIERSON.

†1001. RIBES UVA-CRISPA L. Moulin, Kinnaird, E. Perth, WEBB.

†1003. R. RUBRUM L. Moulin, E. Perth, WEBB.

†1004. R. ALPINUM L. Thurso, Caithness; Kenmore, M. Perth, DRUCE; Moulin, E. Perth; Dalnave, E. Ross, WEBB.

†1004 (2). R. SANGUINEUM L. Jamestown, E. Ross, WEBB.

†1012. SEDUM REFLEXUM L. Contin, E. Ross, WEBB.

†1016. S. ALBUM L. Lough Neagh, Antrim, Mrs WEDGWOOD.

†1021. S. SPURUM Bieb. On walls near Southton, H. L. GREEN. Det. THELLUNG.

†1044. LYTHRUM MEONANTHUM Link. Robroyston, Lanark, GRIERSON.

†1045. L. HYSSOPIFOLIA L. Meanwood, Leeds, BUTCHER; Sussex, SALT.

1052. EPILOBIUM ROSEUM Schreb. Hoar Cross, Staffs, DRUCE.

†1061. OENOTHERA BIENNIS L. Wymondham, Norfolk, Miss POMEROY. Det. THELLUNG. Colchester waste ground, BROWN.

1062. O. GRANDIFLORA Ait. Hitchin Hill, Herts, self sown, LITTLE. Det. WILMOTT.

†1062. O. LACINIATA. Bristol, N. SANDWITH.

†1067. O. SINUATA L. Christchurch, S. Hants, Mrs ROTHWELL & RAYNER.

†1070. O. TENELLA Cav. Sleaford, Miss LANDON; Penarth. Canton, Cardiff, R. L. SMITH. Det. THELLUNG.

†1071. FUCHSIA RICCARTONI Hort. Near Kyleakin, Skye, WEBB. Col. H. H. Johnston says that the Orkney *Fuchsia* has been determined at Kew as *F. macrostemma*, but as it was planted on the moor it does not come into our List.

1072. CIRCAEA LUTETIANA L., var. CORDIFOLIA Lasch. Dolgelly, Merioneth; Llymfaut, Montgomery, BARTON.

†1077. MESEMBRYANTHEMUM EDULE L., var. FLAVUM. Naturalised on Dawlish Warren, Devon, D'URBAN.

†1081. ERYNGIUM PLANUM L. Welbeck, Notts, GOULDING. Probably, THELLUNG.

†1091. BUPLEURUM LANCIFOLIUM Horn. Barry Docks, Glamorgan, R. L. SMITH.

†1097 (2). APIUM LEPTOPHYLLUM (Pers.) P.J.M. Cardiff. Glamorgan, Miss VACHELL; Portishead, N. Somerset, Mrs SANDWITH. Det. THELLUNG.

†1101. AMMI MAJUS L. Saltwood, Kent, very luxuriant specimens in lucerne field, Mrs GIBBINGS.

†1102. A. VISNAGA L. Glasgow, GRIERSON.

1108. SISON AMOMUM L. Within the boundary of Worcester city, HAMER.

†1109. PRIONITIS FALCARIA Dum. In arable ground, Wallingford, Berks, known for some years and not disturbed by agricultural operations, R. HUTCHINSON; in immense quantity and thoroughly naturalised at Swalecliffe and about Sibford, Oxon, DRUCE; near Pinton, Hitchin, Herts, getting to be a pest, VAN DE WEYER.

*1119. CHAEROPHYLLUM TEMULUM L. Lough Neagh, Co. Down, STELFOX in *Irish. Nat.* 96, 1923.

†1128. ANTHRISCUS CEREFOLIUM Bess. Potterne, Wilts, GWATKIN; North Aston, Oxon, DRUCE.

*1134. OENANTHE CROCATA L. Luton Hoo Park, Beds, *Saunders Fl.*

*1135. O. PIMPINELLOIDES L. Weybridge Common, Surrey, Lady DAVY. What is almost certainly this species was found on Epsom Racecourse by C. E. BRITTON in 1918, but it lacks fruit and root.

*1136. O. SILAIFOLIA Bieb. Buildwas, Salop, MELVILL.

*1137. O. LACHENALII Gmel. Rumney, Monmouth, WADE; Gravenhurst, Beds, *Saunders Fl.*

1147. ANGELICA SYLVESTRIS L., var. DECURRENS Wallr. Near Lumsden, N. Aberdeen, WILSON; Hoar Cross, Staffs; St David's, Pembroke, DRUCE.

†1148. ARCHANGELICA OFFICINALIS Hoffm. Canal, Woodlesford, Leeds, BUTCHER.

*1152. PEUCEDANUM OSTRUTHIUM Koch. By the river at Cortachy, Forfar, a new county record, DRUCE.

†1152 (2). P. GRAVEOLENS Benth. Marcham, Berks, DRUCE.

†1153. HERACLEUM VILLOSUM Fisch. Potter Heigham, Norfolk, RAYNER; railway bank beyond Skewen, Glamorgan, WEBB; road-

side between Wick and John o' Groats, Caithness, DRUCE; Ferryside, Carnforth, HAMER. Well photographed in *Gard. Chron.*

†1154. H. SPHONDYLIUM L., var. ANGUSTIFOLIUM Huds. Near Thornton Dale, N. Yorks, LAWSON, ex FLINTOFF.

1169. CAUCALIS NODOSA Scop., var. PEDUNCULATA Druce. St Ouen's, Jersey, *Bot. Soc. Exp.*

†1171. C. LATIFOLIA L. Near Taunton, Somerset, W. D. MILLER.

1172. HEDERA HELIX L., var. SARNIENSIS Druce. Near Penzance, Cornwall, DRUCE.

1174. CORNUS SUECICA L. Hole of Horcum, N. Yorks, FLINTOFF.

†1177. SAMBUCUS RACEMOSA L. Near Warlingham, Surrey, BEADELL.

1178. S. NIGRA L., var. LACINIATA L. Escape at Barton, Beds, *Saunders Fl.*

1179. S. EBULUS L. Thornton Dale, N. Yorks, FLINTOFF.

1184. LONICERA CAPRIFOLIUM L. *Native looking in Catcombe Wood, near Hilmarton, Wilts, Lady DAVY; Ridgmont, Pulloxhill, Beds, *Saunders Fl.*

†1187. L. XYLOSTEUM L. Near Fernhill, Carmarthen, HAMER; Nowarth Castle Dene, Cumberland, DRUCE.

†1189. LEYCESTERIA FORMOSA Wallich. Abergarwed, Resolven, Glamorgan, WEBB.

†1210. ASPERULA ARVENSIS L. Robroyston, Glasgow, GRIERSON.

†1223. VALERIANELLA ERIOCARPA Desv. *Thorp Pit, Staines Lane, Surrey, Lady DAVY; *near Wye, Kent, Miss COBBE; *Meole Brace, Salop, J. C. MELVILL.

†1242. Grindelia squarrosa Dunal. Ware, Herts, Graveson.

†1245. Solidago canadensis L. Fort William, Westerness; Beauly Bridge, Easterness, Webb.

1248. Bellis perennis L., var. discoidea. Dunnet, Caithness, Druce.

†1253. Aster laevis L. Lough Neagh, Tyrone, in large masses, T. Green in *Irish Nat.* 107, 1923.

†1255. A. novi-belgii L. Par, St Austell, Cornwall, Miss Todd. Det. Thellung.

1258. A. Tripolium L., var. discoideus Reichb. Cliff near Wilsthorpe, south of Bridlington, N. Yorks, Flintoff; a pretty form of the rayed plant, with small leaves, in a salt marsh near Lelant, Cornwall, Mrs Brown.

†1262. Erigeron bonariense L. Gloster, Gambier-Parry. Det. Thellung.

†1264. E. mucronatus DC., var. Wallfoot between St Lawrence and Niton, Isle of Wight, Rayner.

1269. Filago minima Fr., var. prostrata. Forest, Guernsey, Trapnell.

1271. Anaphalis margaritacea C. B. Clarke. Yarcombe, Devon, Mrs Northcote in *Trans. Dev. Ass.* 1922; Randwick, E. Gloster, about a mile from nearest house, Nelmes.

†1278. Gnaphalium undulatum L. Guernsey, Trapnell.

*1279. Inula Helenium L. Lease Rigg Farm, Grosmont, Yorks, known for 50 years, Flintoff; Strathpeffer, E. Ross, Webb.

†1284. I. viscosa Ait. East Moors, Cardiff, Miss Vachell; Barry, Glamorgan, R. L. Smith.

1286. Pulicaria Pulicaria (L). = P. prostrata Aschers. Penarth, Cardiff Glamorgan, probable adventive, R. L. Smith.

†1291. AMBROSIA ARTEMISIFOLIA L. Christchurch, S. Hants, Mrs ROTHWELL & RAYNER; Cardiff, Glamorgan; Silloth, Cumberland, DRUCE.

†1302. HELIANTHUS LAETIFLORUS Pers. Chipping Norton, Oxon, DRUCE.

†1312. GALINSOGA PARVIFLORA Cav. Leckwith, Glamorgan, R. L. SMITH.

†1314. MADIA SATIVA Molina. Cardiff, STORRIE. Det. THELLUNG; Brislington, Bristol, GAMBIER-PARRY.

†1315. HEMIZONIA PUNGENS T. & G. Sleaford, Lincoln. Miss LANDON; near Woodbridge, E. Suffolk, H. K. A. SHAW.

†1317. H. KELLOGGII Greene. Sleaford, Lincoln, Miss LANDON; Saltney, Flint, D. THOMAS, ex WHELDON. Det. THELLUNG.

†1322. TAGETES MINUTA L. Bristol, N. SANDWITH.

†1324. ANACYCLUS RADIATUS Lois. Cardiff Docks. This confirms Riddelsdell's naming of the B. form. See *Rep. B.E.C.* 172 1905. Barry, Glamorgan, R. L. SMITH. Det. THELLUNG.

†1325. A. VALENTINUS L. Bristol, N. SANDWITH.

†1327. ACHILLEA TANACETIFOLIA All. Barry Dock, Glamorgan R. L. SMITH.

1329. A. MILLEFOLIUM L., very near to *A. setacea* W. & K. Hanslope, Bucks, DRUCE; Pyrford, Surrey, Lady DAVY.

†1338. ANTHEMIS TINCTORIA L. Buildwas, Salop, MELVILL.

†1340. A. COTA L. Glasgow, GRIERSON. Det. THELLUNG.

1343. A. ARVENSIS L. Near Bentley Common, Staffs, ex Sir R. CURTIS.

1344. A. RUTHENICA M.B. Bowling Distillery, Dumbarton, GRIERSON. Det. THELLUNG.

†1348. A. MIXTA L. Bristol, N. SANDWITH.

†1357. CHRYSANTHEMUM CORONARIUM L. Glasgow, GRIERSON; Cannock Chase, Staffs, DRUCE.

†1362. MATRICARIA SUAVEOLENS Pursh. Guernsey, TRAPNELL; Fishguard, Pembroke, DRUCE.

†1370. ARTEMISIA SCOPARIA W. & K. Bristol, N. SANDWITH.

†1380. A. BIENNIS Willd. Christchurch, S. Hants, Mrs ROTHWELL & RAYNER.

†1383 (2). A. LUDOVICIANA Nutt., var. GNAPHALODES (Nutt.). Avonmouth Dock, Gloster, N. SANDWITH; Radyr, Glamorgan, R. L. SMITH. Det. THELLUNG.

1384. TUSSILAGO FARFARA L. A small leaved barren form with leaves ½-1½ in. long by ¾-1⅛ broad, in the Yellow Corrie of Glen Lyon, M. Perth. Probably this was the plant which Don mistook for *Homogyne*, DRUCE.

1393. SENECIO AQUATICUS Huds., var. PENNATIFIDUS Gren. & Godr. Potterne, Wilts, GWATKIN; Llynfant, Montgomery, BARTON; either this or the true *erraticus* from the New Forest, S. Hants, TRAPNELL.

†1396. S. SQUALIDUS L. Sir ROGER CURTIS and myself noticed this in great quantity on the slag heaps near Walsall, Bentley Common, Ocker Hill and Tipton, Staffordshire to which it had spread from the adjoining railway. It was also seen near the Wren's Nest and on the top of Dudley Castle. Cirencester, Gloster, GREENWOOD.

†1399. S. VISCOSUS L. On slag at Grosmont, N. Yorks, FLINTOFF.

†1402. S. CINERARIA DC. Hayling Island, S. Hants, Miss HILLARD.

†1410. CALENDULA OFFICINALIS L. At Kemble Junction, Wilts;

near Tenby, Pembroke; quite naturalised near St. Peter's and Gorey, Jersey, DRUCE.

†1411. C. ARVENSIS L. Pyrford, Surrey, Lady DAVY. Det. THELLUNG.

†1412. CRYPTOSTEMMA CALENDULA Druce. Cardiff, Glamorgan, R. L. SMITH.

*1420. ARCTIUM NEMOROSUM Lej. · Llynfant, Montgomery, BARTON.

†1422. CARDUUS NUTANS L., var. MACROCEPHALUM (Desf.) Bristol, N. SANDWITH.

1424. C. CRISPUS L. The true plant, The Chantries, Shalford, Surrey, H. W. MONCKTON. A hybrid of this with C. ACANTHOIDES occurred at Marston, Oxon, DRUCE, teste THELLUNG.

†1431. CIRSIUM TUBEROSUM All. Barry Dock, Glamorgan, R. L. SMITH. Det. THELLUNG.

†1432. C. OLERACEUM Scop. Well established by a ditch in Burnage, near Manchester, H. BRITTEN, jun. This is, I think, the only record for Britain. The Lincolnshire record of 1823, *i.e.*, between Market Deeping and Crowland, I have vainly searched, DRUCE.

1432 (2). C. POLYANTHEMOS, var. CRETICUM Fiori & Paol. Marston, Oxon, DRUCE, teste THELLUNG.

1433. C. SETOSUM Bieb. Christchurch, S. Hants, Mrs ROTHWELL & RAYNER.

1433. C. ARVENSE Scop., var. MITE Koch. Balmoral, Aberdeen, Hon. Mrs ADEANE: Llety Rhys, Brecon, WEBB.

1434. C. PALUSTRE × ARVENSE. Cardiff, Glamorgan, Miss VACHELL. Probably, THELLUNG.

1445. SAUSSUREA ALPINA DC. Near Achnashellach, W. Ross, WEBB.

1449. CENTAUREA JACEA L., sub-sp. JUNGENS Gugler, var. VARIISQUAMA Gugler. Fort Doyle, Guernsey, TOMLIN; Sommeilleuse, St Andrews, Guernsey, TRAPNELL; Exmouth, S. Devon, Miss TODD.

1451. C. NEMORALIS Jord. Naworth Castle, near Askerton Castle, Vale of Lorton, Cumberland, DRUCE; Dolgelley, Merioneth, BARTON. Var. SUBINTEGRA Britton. Dolgelley, Merioneth, BARTON; Cannock Chase, Staffs; Swanage, Studland, Dorset; Wood Perry, Tadmarton, Oxon, DRUCE; Sommeilleuse, Guernsey, TRAPNELL, with f. RADIATA.

1451. C. OBSCURA Jord. Drig, Cumberland; Keltney Burn, Kenmore, Mid Perth [500]; Tadmarton, Oxon, DRUCE; Dolgelley, Merioneth, with f. PINNATIFIDA and f. ELONGATA, BARTON.

1451. C. DRUCEI Britton. Tipton, Cannock, Staffs, DRUCE.

1456. C. SCABIOSA L., f. DUMETORUM Beck. Stow Wood, Oxon [398]; Swanage, Dorset, DRUCE. Var. INCISA, but not extreme. Frilford, Berks [302], DRUCE. Forma CRETACEA Beck. Bettyhill W. Sutherland, DRUCE.

The above Centaureas determined by C. E. Britton.

†1459. C. DIFFUSA Bieb. Bristol, N. SANDWITH.

†1465. C. CALCITRAPA L. Bradford, Yorks, CRYER.

†1476. CARTHAMUS LANATUS L. Cladagh, Galway, Mrs EVANS; Bristol, Mrs SANDWITH.

†1477. C. TINCTORIUS L. Stoughton, Guildford, Surrey, CLARKE; Warlingham, Surrey, BEADELL; Hayling Isle, S. Hants, Miss HILLARD. Var. INERMIS Schweinf. Dynas Powis, Glamorgan, R. L. SMITH.

1478. SCOLYMUS HISPANICUS L. Barry Dock, Glamorgan, R. L. SMITH.

1479. S. MACULATUS L. Bristol, N. SANDWITH.

1480. CICHORIUM INTYBUS L. On the metamorphic limestone country round Moulin, E. Perth; Jamestown, E. Ross, WEBB.

1489. PICRIS HIERACIOIDES L., var. UMBELLATA Schultz. Tewkesbury, Gloster, Miss TODD.

†1495. CREPIS NICAEENSIS Balb. Totternhoe, Harlington, Leagrave, Beds, *Saunders Fl.*; Railway bank at Newton, near Rugby, Warwick, *Rugby List*, 1923.

1502. C. TARAXACIFOLIA Thuill., var. SUBINDIVISA Druce. Near Cambridge; Marston, Oxon, DRUCE.

†1503. C. SETOSA Hall. f. Between Dunmer and Popham Lane, N. Hants, RAYNER.

Mr J. Cryer has determined the Hieracia save where otherwise stated.

1505. HIERACIUM PILOSELLA L., var. CONCINNATUM F.J.H. St Peter's, Jersey, DRUCE.

†1510. H. PRAEALTUM Vill. Still in great plenty on the railway bank between Hanslope and Castlethorpe, Bucks, where it has been growing for over twenty years. Specimens are distributed through the Club this year, DRUCE.

†1511. H. STOLONIFLORUM W. & K. Still more plentiful in the same locality. It has now established itself on the western side of the railway and is likely to extend. Specimens are distributed this year. DRUCE.

1512. H. AURANTIACUM L. Chalk Hill, Kent, known for 60 years,—*Country Life* 429, 1921.

*1512. H. BRUNNEOCROCEUM Pugsl. In the churchyard of St Chads, Lichfield, Staffs, DRUCE & Sir R. CURTIS; Grosmont, N. Yorks, FLINTOFF; Tintern, Monmouth, N. SANDWITH.

1513. H. ANGLICUM Fr., var. LONGIBRACTEATUM F.J.H. Cnochan Rocks, W. Ross and W. Sutherland, DRUCE. Var. CERINTHIFORME

Backh. Braemar, S. Aberdeen; Ben Heasgarnich, M. Perth, DRUCE.

1514. H. LANGWELLENSE F.J.H. Thurso, Caithness, 1923, DRUCE.

1518. H. HOLOSERICEUM Backh. Meal Garbh, W. Sutherland, July 1923, DRUCE.

1528. H. MARSHALLI Linton. Yellow Corrie and Roro Corrie, Glen Lyon, M. Perth, DRUCE.

†1537. H. PULMONARIOIDES Vill. Kenmore, M. Perth, whence Mr Pugsley recorded it. Evidently the plant is an alien from the adjoining Taymouth policies, DRUCE.

*1539. H. LEYI F.J.H. Smoo Cave and Bettyhill, W. Sutherland, July 1923, DRUCE.

1540. H. SCHMIDTII Tausch, var. CRINIGERUM Fr. Bettyhill, W. Sutherland, DRUCE and WILLIAMSON, teste CRYER.

1542. H. RUBICUNDUM F.J.H. Bettyhill, W. Sutherland, DRUCE. Var. BOSWELLI (Lint.). Smoo Cave, W. Sutherland, DRUCE.

1543. H. CALEDONICUM F.J.H. Bettyhill, W. Sutherland, DRUCE. Det. PUGSLEY.

1547. H. SOMMERFELTII Lindeb. This has seeded very plentifully in my garden at Oxford from Clova specimens. It has spread to an adjoining wall. DRUCE.

*1548. H. HYPOCHAEROIDES Gibs. Caenlochan, Forfar, a seedling specimen, DRUCE.

*1550. H. BRITANNICUM F.J.H. Bettyhill, W. Sutherland, DRUCE.

1554. H. PSEUDONOSMOIDES Dahlst. From the old locality, Tomintoul, Banff, July 1923, DRUCE.

1565. H. MACULOSUM Dahlst., var. Glasnevin, Dublin, DRUCE.

*1565. H. SILVATICUM Gouan, var. TRICOLOR W.R.L. Smoo, W. Sutherland, July 1923, DRUCE.

1571. H. CILIATUM Almq. Smoo, W. Sutherland, DRUCE and WILLIAMSON.

1582. H. PETROCHARIS Lint. Caenlochan, Forfar, DRUCE; Cnochan, W. Ross, DRUCE and WILLIAMSON, teste CRYER.

1585. H. EXPALLIDIFORME Dahlst. Clova, Forfar, DRUCE.

1589. H. EUPREPES F.J.H., var. GLABRATUM Lint. Caenlochan, Forfar, July 1923, DRUCE.

1603. H. ORARIUM Lindeb., var. FULVUM F.J.H. Scrabtser, Caithness, July 1923, DRUCE.

1607. H. MACULATUM Sm. Railway near Ashton, Northants, DRUCE.

1609. H. SCIAPHILUM Uechtr. A very curious plant, with very small heads and a numerously flowered panicle, the phyllaries with many yellow-headed glands, near the Wren's Nest, Staffs, on limestone, DRUCE and Sir R. CURTIS.

1626. H. STICTOPHYLLUM Dahlst. Symington, Lanark, 1909; Oykell Bridge, E. Sutherland, 1923, DRUCE.

1629. H. TRIDENTATUM Fr. Wood Perry, Oxon, DRUCE.

1630. H. RIGIDUM Hartm. Russel's Water Common, Oxon, DRUCE.

1634. H. AURATUM Fr. Glen Lyon, M. Perth, DRUCE.

1641. HYPOCHAERIS GLABRA L. Plentiful at Frilford, Berks; local, but fine, near Stow Wood, Oxford, DRUCE; at Poringland, Norfolk, 1½ feet high, Miss TODD.

*1645. TARAXACUM FULVUM Raunk. Fiquet Bay, Jersey, DRUCE.

*1646. T. VALDEDENTATUM Dahlst. Hardwick House, Oxon, DRUCE.

*1646. T. NORDSTEDTII Dahlst. Rotherfield, Oxon, DRUCE.

*1646. T. NAEVOSUM Dahlst. Sibford, Oxon; Cortachy, Forfar; Hursley, S. Hants, DRUCE; Stromness, Orkney, JOHNSTON, with T. NAEVOSIFORME Dahlst.

*1646. T. UNGUILOBUM Dahlst. Isgarth, Lady, Sanday, Orkney, **JOHNSTON**, *l.c.*

1646. T. FAROENSE Dahlst. Near Muckle Water, Rousay, Orkney, JOHNSTON, *l.c.*

1649. LACTUCA SERRIOLA L. Colchester, Essex, BROWN and DRUCE; Cirencester, Gloster, GREENWOOD; Cardiff, Glamorgan, Miss VACHELL; Bristol, N. SANDWITH; Brighton, Sussex, Miss COTTIS; Barry, Glamorgan, R. L. SMITH.

†1653. L. TATARICA C. A. Mey. Galway, Mrs EVANS.

†1653 (3). L. MACROPHYLLA A. Gray. Garden weed, Melmerby, Cumberland. The Patterdale locality in the last *Report* is in Westmorland. Rev. W. W. MASON.

1655. SONCHUS PALUSTRIS L. Waveney, in both Suffolk and Norfolk, W. G. CLARKE; Horsey, E. Norfolk, R. GURNEY.

1656. S. ARVENSIS L., var. GLABRESCENS G.G. & W. Avonmouth Dock, Gloster, N. SANDWITH.

1657. S. ASPER Hill, var. GLANDULOSUS (Coss.) Druce. Naworth, Cumberland, DRUCE. Var. PUNGENS Bisch. Biddesden, Wilts. DRUCE. Var. INTEGRIFOLIUS Lej. Rozel, Jersey; Fishguard, Pembroke; Westonbirt, Gloster, DRUCE. × OLERACEUS. This rare hybrid occurred near Rozel, Jersey, on rich garden soil, DRUCE.

1658. S. OLERACEUS L., var. CILIATUS (Lam.) Druce. Bullingdon, Fishguard, Pembroke; Studland, Dorset; Seascale, Cumberland, DRUCE. Var. TRIANGULARIS Dum. Ocker Hill, Tipton, Staffs; Martyr Worthy, N. Hants; Biddesden, Wilts, DRUCE.

†1660. TRAGOPOGON PORRIFOLIUS L. Easton Maudit, Northants, Miss VENABLES, ex H. L. GREEN; Lambay, Co. Dublin, STELFOX in *Irish Nat.* 88, 1923.

*1662. T. ORIENTALIS L. Hanslope, Bucks, DRUCE.

1666. JASIONE MONTANA L., var. LATIFOLIA Pugsl. Common in Guernsey, TRAPNELL; Plemont, etc., Jersey, DRUCE. A form near LITTORALIS, Lancresse, Guernsey, TRAPNELL.

†1674. CAMPANULA RAPUNCULOIDES L. Near Tandridge, Surrey, Rev. E. C. CRUTWELL; spontaneously in a garden near Chesterfield, Derby, DRABBLE; *Kenilworth, Warwick, *Rugby List*, 1923.

1684. VACCINIUM ULIGINOSUM L. Peat bog, Brampton, Cumberland, FLINTOFF, the typical, glabrous plant at a very low altitude.

1686. V. VITIS-IDAEA L. Tun Tor, Dartmoor, Devon, seen by Mr D'URBAN in 1866.

1691. ARCTOSTAPHYLOS ALPINA Spreng. On Meal Garbh, W. Sutherland, in some plenty, DRUCE.

†1691 (3). GAULTHERIA SHALLON Pursh. Southampton Common, S. Hants, RAYNER.

1694. ERICA CINEREA L., with corolla replaced by leaves. Maltesmoor, Sidmouth, Devon. See *Rep. B.E.C.* 289, 1918, where a similar form but with reddish leaves was sent by Lieut. R. WHYMPER from near Wool, Dorset.

1695. E. TETRALIX L., in a somewhat similar condition. Sent by the Hon. Mrs LEITH from Rhyador, Radnor "× CRAUFORDII." This does not appear to have been properly diagnosed and described. It is not a hybrid but a form in which the corolla is flore pleno, *i.e.*, one within the other.

1696. × E. WATSONI Benth. This seems to flower earlier than *E. ciliaris* as it was in good bloom on July 31 when *ciliaris* was just opening, DRUCE.

1699. E. VAGANS L. (See *E. mediterranea*, *Rep. B.E.C.* 387, 1918, for which it was mistaken). Sandy tract in East Riding, Yorks, probably introduced with Rhododendrons, J. FRASER ROBINSON, in litt. It is also the *E. Tetralix* from Tadmarton Heath, Oxford, as recorded by BEESLEY. Specimens have recently come into my possession which show that they were wrongly named. The heath, with other introduced species, is no longer to be found at Tadmarton, DRUCE.

†1706. RHODODENDRON PONTICUM L. Kerrysdale, Glencarron W. Ross, WEBB; Braemore, W. Ross, seeding freely, DRUCE.

*1707. PYROLA ROTUNDIFOLIA L., var. MARITIMA (Keny.). On the Durham coast, J. H. HARRISON.

1708. P. MEDIA Sw. Cortachy, Forfar, JAMES & DRUCE.

1711. MONESES UNIFLORA A. Gray. In immense quantity in a larch wood near Golspie (a second locality), flowering freely. The flowers have a delicious fragrance. A schoolboy said they called them cowslips, DRUCE.

1712. HYPOPITYS MONOTROPA Crantz. On Culbin Sands. Easterness, PATTON & STEWART.

*1723. HOTTONIA PALUSTRIS L. On Culbin Sands, Easterness. new to Scotland, PATTON & STEWART; between Hatfield Woodhouse and Lindholme Moor, West Riding, Yorks, FLINTOFF.

1740. TRIENTALIS EUROPAEA L., forma NANA Druce. On the Isle of Noss, Shetland, the specimens only 1-2½ in. high, THOS. MAINLAND.

*1746. SAMOLUS VALERANDI L. Dovey Junction, Montgomery, BARTON.

†1747. SYRINGA VULGARIS L. Postcombe, Oxon, DRUCE; hedges north of Evanton, E. Ross, WEBB.

†1748. FRAXINUS EXCELSIOR L., var. DIVERSIFOLIA Ait. Near Egton Bridge, N. Yorks, doubtless planted, FLINTOFF.

†1751. VINCA MINOR L. Alness, E. Ross, WEBB.

1755. CENTAURIUM VULGARE Rafn. *St Helen's Spit, Isle of Wight, C. J. GREEN in *Hb. Druce*; 7 or 8 miles from sea at Cefn, Glamorgan, P. RICHARDS; *Marlborough Drive, New Forest, S. Hants, B. KING. An interesting N.C.R.

1763. GENTIANA LINGULATA Ag., var. PRAECOX Raf. Distributed this year from Ivinghoe Beacon, Bucks, where it occurred in great quantity and in good condition; Dunstable Downs, Beds; *Barnack, Northants, DRUCE.

1764. G. GERMANICA Willd. Sundon, Beds, Miss BROWN & Lady DAVY; near Albury, Bucks, P. RICHARDS. × PAMPLINII Druce. Albury, Bucks, P. RICHARDS.

1765. G. CAMPESTRIS L. Very luxuriant at Roro, Glen Lyon, Mid Perth, specimens up to 15 inches high, growing with var. ALBA. Mrs FLEMING & DRUCE. Var. BALTICA (Murb.). Seascale, Cumberland, HELLON & WILLIAMSON.

†1768. COLLOMIA GRANDIFLORA Dougl. Railway cutting, Malvern Link, Worcester, T. J. WALL. Det. THELLUNG.

†1771. GILIA CAPITATA Sims. Barry, Glamorgan, R. L. SMITH; Bristol, N. SANDWITH; railway bank, Carmarthen, HAMER. Det. THELLUNG.

1777. POLEMONIUM CAERULEUM L. Pexton Moor, Thornton Dale, N. Yorks, among bracken, "truly wild," FLINTOFF; †Llangower, Merioneth, BARTON.

†1780. PHACELIA TANACETIFOLIA Benth. Horsepath, Oxon, by roadside, in some quantity, T. J. WALL. Det. THELLUNG. See *Report* 848, 1922.

†1787. LAPPULA ECHINATA Gilib. Woodbridge, E. Suffolk, H. K. A. SHAW; Sherborne St John, N. Hants, H. L. GREEN; Shalford Park, Surrey, CHASE; Trewsbury, Gloster, Miss D. CATOR; Barry, Glamorgan, R. L. SMITH.

1789 (4). BENTHAMIA INTERMEDIA (F. & M.), teste Kew. Near Knocking, Beds, so abundant in arable fields as to be pest, Miss MALDEN, ex DRUCE.

†1789 (5). B. MENZIESII (Nels. & McBr.). Hungerford, Berks, VAN DE WEYER; Abbey Wood, W. Kent, St J. MARRIOTT; Hayling Isle, Miss HILLARD; Ware, Herts, DRUCE; Dewsbury, Yorks, H. BROOKE; Lingfield, Sussex, Rev. E. C. CRUTWELL; Patshull, Staffs, Lady J. LEGGE. Det. THELLUNG.

†1792. SYMPHYTUM PEREGRINUM Ledeb. Bexhill, Sussex, BOYS; Naworth, Cumberland; Dunstable, Beds, DRUCE. × OFFICINALE. Goring, Oxon, DRUCE.

†1793. S. ORIENTALE L. Freemington, N. Devon, TRETHEWY. Specimens distributed this year. Caistor St Edmund, E. Norfolk, B. REYNOLDS.

†1800 (2). ANCHUSA OCHROLEUCA M. Bieb. Hayle, Cornwall, Miss TODD. Det. THELLUNG.

†1800 (3). A. PROCERA Bess. Hayle, Cornwall, Miss TODD; Sleaford, Lincs, Miss LANDON; Ware, Herts, Mrs WEDGWOOD. Det. THELLUNG.

†1808. PULMONARIA OFFICINALIS L., agg. Okehampton, Devon, Mrs REYNOLDS.

1811. PNEUMARIA MARITIMA Hill. North shore of Loch Linnhe, Moidart, near Redfour Ferry, Mrs R. MCKENNA.

1813. MYOSOTIS PALUSTRIS Hill, var. STRIGULOSA Reichb. Marlesham, E. Suffolk, H. K. A. SHAW.

1821. M. LUTEA Pers., var. PALLIDA (Bréb.). St Catherine's, Jersey, also with pure yellow flowers, DRUCE.

1823. Lithospermum purpureo-caeruleum L. In good flower in April at Oxwich, Glamorgan, Druce; found in new locality near Parkmill, Glamorgan, Webb.

†1826. Echium italicum L. Sheen, Surrey, Lady Victoria Russell.

†1827. E. plantagineum L. Barry, Glamorgan, R. L. Smith.

1839. Cuscuta Epithymum Murr. Cogan Pill, Glamorgan, R. L. Smith. Det. Thellung.

†1848. Solanum rostratum Dunal. Warlingham, Surrey, Beadell.

1854. Atropa Belladonna L. Farleigh, Wilts, Gwatkin.

†1855. Datura Stramonium L. Wye, Kent, Miss A. B. Cobbe; Sibford, Oxon, F. Lascelles.

†1855 (2). D. ferox L. Pilton, Devon, W. P. Hiern in *Trans. Dev. Ass.* 78, 1922.

1856. Hyoscyamus niger L. Bentley Common, Staffs, ex Sir R. Curtis.

†1857. H. albus L. Barry, Glamorgan, R. L. Smith.

†1860. Verbascum Phlomoides L. Swanage, Dorset, Druce.

†1861. V. thapsiforme Schrad. Swaythling, S. Hants, Rayner; Swanage, Dorset, E. W. Nicholson. Det. Thellung.

†1863. V. virgatum Stokes. Teignmouth, Devon, Miss Todd; Canton, Glamorgan, R. L. Smith; near the railway between Grosmont and Goathland, N. Yorks, Flintoff.

†1864. V. Blattaria L. (album). Ledbury, Hereford, Miss Todd.

†1865. V. pulverulentum Vill. Barry, Glamorgan, R. L. Smith; Christchurch, S. Hants, Rayner.

1866. V. LYCHNITIS L. × THAPSUS L. Westwell, Kent, Miss JEFFREY & Miss COBBE.

1867. V. NIGRUM L. Canton, Glamorgan, R. L. SMITH; Grosmont, N. Yorks, FLINTOFF. Var. ALBUM. Grangetown, Glamorgan, R. L. SMITH. Det. THELLUNG. A hybrid of it at Radyr, Glamorgan [64], R. L. SMITH.

†1869. V. CHAIXII Vill. Canton, Cardiff [63], R. L. SMITH. Det. THELLUNG.

1873. LINARIA VULGARIS Mill, var. PELORIA. Plymouth, Devon, N. SANDWITH.

†1876. L. BIPARTITA Willd. Riddings, Lanark, GRIERSON. Det. THELLUNG.

†1877. L. PURPUREA Mill. Ahascragh, Galway, J. AINSWORTH.

1878. L. REPENS Mill × VULGARIS. Grangetown, Glamorgan [58], R. L. SMITH.

†1886. L. CYMBALARIA Mill. var. ALBA. In some quantity and seeding true, Penzance, Cornwall, shown to me by Mr THURSTON; also from the walls of the Canal, Bolton-le-Sands, Lancs, Miss R. BRIGHT; Newlyn, Norfolk, COOPER; Bishopsbourne, Kent, Miss PALMER.

1893. SCROPHULARIA ALATA Gilib. River above Musselburgh, Midlothian, FOGGITT.

†1896. S. CANINA L. Radyr, Glamorgan [79], R. L. SMITH. Det. THELLUNG.

†1898. MIMULUS GUTTATUS DC. By the Cynon, near Hirwain Brecon, WEBB; near Sidmouth, G. T. HARRIS in *Trans. Dev. Ass.* 1922.

†1898. M. LUTEUS L. Sandside Bay, Deerness, Orkney, JOHNSTON. Identified by W. B. TURRILL as the S. American species.

†1899. M. MOSCHATUS Dougl. Between Ambleside and Grasmere, Westmorland, T. B. BLOW; Ceinws, Montgomery, BARTON.

†1903. DIGITALIS LUTEA L. Near Looe, Cornwall, Mrs R. R. ROBERTS.

†1904. ERINUS ALPINUS L. Walls at Babraham, Cambridge, Viscountess GREY; Morham, East Lothian, R. P. BROTHERSTON in *Gard. Chron.* 256, 1923.

1908. VERONICA CHAMAEDRYS L., var. PROCERA Willk. Near Penzance, Cornwall, DRUCE.

1912. V. ANAGALLIS-AQUATICA L. Between Galway and Barna, Galway, D. C. MURRAY.

*1930. V. SCUTELLATA L. Dolgelley, Arthog, Merioneth, BARTON.

*1931. EUPHRASIA STRICTA Host. Holland, South Ronaldshay, Orkney, JOHNSTON. (This should be submitted to various experts. It is somewhat doubtful as a British species).

1932. E. BOREALIS Wettst. Cnochan, W. Ross, DRUCE; Durness, W. Sutherland; *Chippenham, Cambridge, DRUCE; *Magillagan, Londonderry, S. A. BENNETT.

1933. E. BREVIPILA B. & G. Ivinghoe Beacon, Bucks; Dunstable Downs, Beds; Wareham and Corfe, Dorset; Ballater, S. Aberdeen; Bettyhill, Durness, W. Sutherland; Cnochan, W. Ross; Rescobie, Forfar; John o' Groats, Caithness, DRUCE; Magilligan sandhills, Londonderry, S. A. BENNETT.

1934. E. NEMOROSA Pers., var. CILIATA Drabble. Swanage, Dorset; St Ouen's and Plemont, Jersey; Ketton Stone Pits, Lincs; Wakerley, Northants; Westwell, Oxon, DRUCE; Pilligreen, W. Sussex, BURDON; Freshwater, Isle of Wight, Lady DOUIE; Magilligan sandhills, Londonderry, S. A. BENNETT.

*1934 (4). E. CONFUSA Pugsl. Nant Francon, Carnarvon, PUGSLEY in *Journ. Bot.* 22, 1923.

1935. E. CURTA Fries. Farr, W. Sutherland; Holburn Head, Caithness, DRUCE. Var. GLABRESCENS Wetts. Seascale, Cumberland, DRUCE.

1936. E. OCCIDENTALIS Wetts. Quenvais, Jersey, DRUCE; Vazon, Guernsey, TRAPNELL; Saunton, N. Devon, Miss TODD; *Ivinghoe Beacon, Bucks, DRUCE.

1939. E. MICRANTHA Reichb. (GRACILIS Fr.). Erriboll, near Ben Hope, W. Sutherland, DRUCE; near Goathland, N. Yorks, FLINTOFF.

1940. E. SCOTICA Wetts. Bettyhill, Durness, W. Sutherland; Ullapool, W. Ross; Urrisbeg, Galway, 1921, DRUCE.

†1940 (2). E. MINIMA Fr. Gairy Hill, S. Ronaldshay, Orkney, JOHNSTON, *l.c.*

1941. E. ROSTKOVIANA Hayne. New Forest, S. Hants, Lady DOUIE.

1943. E. KERNERI Wetts. Cranbourne Chase, Dorset, MELVILL; Hertford, ANSELL; Bradninch, N. Devon, Lady DOUIE; Anglesey, S. A. BENNETT; Swanage, Dorset, DRUCE.

Many of the Eyebrights have been kindly determined by Mr D. Lumb, and Mr W. H. Pearsall has also given assistance.

1951. RHINANTHUS MAJOR Ehrh. Bettyhill, W. Sutherland, DRUCE.

1966. OROBANCHE MAJOR L. (ELATIOR). Westwell, Kent, Miss M. COBBE.

1971. O. MINOR Sutt. *Carmarthen, HAMER; Barry, Glamorgan [70], R. L. SMITH; on clover, Menmor, Galway, Mrs EVANS.

*1975. UTRICULARIA VULGARIS L. and 1978. U. MINOR L. Dovey Junction, Montgomery, BARTON.

†1986 (3). VERBENA HASTATA L. Christchurch, S. Hants, Mrs ROTHWELL & RAYNER.

1988. MENTHA ROTUNDIFOLIA Huds. Wigton, DRUCE; Limpsfield, Surrey, CRUTWELL; *Ridgmont, Beds, *Saunders Fl.* × SPICATA. Carnow Downs, Feock, Cornwall, 1907, DAVEY.

*1989. M. ALOPECUROIDES Hull. Garden origin, Mere, Wilts, W. HERRIDGE; Llanfairfechan, Carnarvon, PUGSLEY in *Journ. Bot.* 22, 1923.

1990. M. LONGIFOLIA Huds. Marham, W. Norfolk, ROBINSON; †Evie, Orkney, JOHNSTON.

1990. × M. VILLOSA Huds. Marham, W. Norfolk, ROBINSON.

*1992. M. CRISPA L. Of garden origin, Torquay, S. Devon, W. HERRIDGE.

1993. × M. PIPERITA L., forma. Brailes, Wilts, 1922, C. P. HURST. See *Rep.* 851, 1922. When fresh it had a strong scent of citron, and is perhaps similar to Mr White's *M. citrata* from the Mendips. An autumnal specimen of the Wilts plant had a peppermint odour. Dr THELLUNG refers it to *piperita*.

1994. M. AQUATICA L., var. HIRSUTA (Huds.) × LONGIFOLIA. Waterford Marsh, Hertford, 1846, ANSELL. Var. *vulgaris* (Sole). Earthcott, Alveston, Gloster, E. NELMES.

1996. × M. VERTICILLATA L., var. RIVALIS. Llanwarne, Hereford, B. KING.

1997. × M. GENTILIS L. Near Sennen, Cornwall, Mrs MARGARET BROWN; Swaythling, S. Hants, RAYNER; *Sibton, E. Suffolk, REDGROVE.

1999. × M. RUBRA Huds. Near Ray Island, N. Essex, 1922, DRUCE; near Waggoner's Wells, Surrey, C. P. HURST.

2000. M. ARVENSIS L., var. PRAECOX (Sole), teste J. FRASER.

Thornton Reservoir, Leicester (see *Report* 583, 1916), A. E. Wade, as *M. sativa*, var. *rivalis*.

†2009 (2). Satureia montana L. Winchester, Hants, Rayner.

2010. S. menthifolia (Host) = sylvatica Bromf. There is a specimen from South Baddesley, S. Hants, in *Hb. Kew*.

2011. S. Calamintha Scheele, var. Briggsii Druce. Gt. Orme, Carnarvon, H. Kew; near Dartford, Kent; Corfe, Dorset, Druce.

2013. S. Acinos Scheele. Barry, Glamorgan [46], R. L. Smith.

*2016. Clinopodium vulgare L. Llyfnant Valley, Montgomery, Barton.

†2017. Melissa officinalis L. Offley Hay, on a common, Staffs, Druce and Sir R. Curtis; Cerris, Merioneth, Barton.

†2025. Salvia nemorosa L. Par, Cornwall, Miss Todd. Det. Thellung.

†2031. S. verticillata L. Grosmont, N. Yorks, Flintoff; Buildwas, Salop, Melvill.

†2039. Dracocephalum parviflorum Nutt. Near Warlingham, Surrey, Beadell.

*2042. Scutellaria galericulata L. Dovey Junction, Montgomery, Barton.

2047. Melittis Melissophyllum L. Sterfield English, Hants, H. L. Green.

†2048. Sideritis montana L. Christchurch, S. Hants, Mrs Rothwell & Rayner.

2056. Stachys sylvatica L. Monstrosity. See E. M. Cutting in *Ann. Bot.* 405-25, 1921.

2056. × S. ambigua Sm. Tapton, Derby, Drabble.

*2058. S. ARVENSIS L. Dovey Junction, Montgomery, BARTON.

†2059. S. ANNUA L. Linkenhorn, Cornwall; Christchurch, S. Hants, Mrs ROTHWELL & RAYNER; Cardiff, Glamorgan, Miss VACHELL.

†2059 (2). S. RECTA L. Barry, Glamorgan, R. L. SMITH.

2062. GALEOPSIS TETRAHIT L., var. NIGRICANS Bréb. Wenvoe, Glamorgan, R. L. SMITH; Studland, Dorset, DRUCE.

†2069. LAMIUM MACULATUM L. Buckenham, E. Norfolk, B. REYNOLDS; roadside between Hirwain and the Brecon border, Glamorgan, WEBB.

†2082. TEUCRIUM CHAMAEDRYS L. Minchinhampton Common. Gloster, Dr PEGLER.

2085. AJUGA GENEVENSIS L. Adventive at Hayle, Cornwall. As I expected this is the plant which was first recorded as *A. pyrmidalis*. Dr Pegler's specimen proves it to be *A. genevensis*.

†2088. PLANTAGO PSYLLIUM L. Bristol, N. SANDWITH. Det. THELLUNG.

2090. P. CORONOPUS L., var. TENUIFOLIA Wirtg. Near Cardiff, Glamorgan, Prof. D. McLEAN; a minute form, with nearly entire leaves, in a wet turfy place, Seascale, Cumberland, Dr HELLON.

2092. P. LANCEOLATA L., var. TIMBALI (?). Frilford, Berks, DRUCE.

2100 (3). P. ARISTATA Michx. Bristol, Gloster; Portishead, Somerset, N. SANDWITH.

2102 (11). PARONYCHIA POLYGONIFOLIA L. Bristol. N. SANDWITH.

*2103. HERNIARIA GLABRA L. Near Torquay, Devon. See *N.H. Journ. Torquay*, 361, 1923.

2110. AMARANTHUS RETROFLEXUS L. Cardiff, Glamorgan, Miss VACHELL; Uxbridge, Middlesex, DRUCE; Barry Dock, Glamorgan, R. L. SMITH. Var. DELILEI Thell. Par, Cornwall, Miss TODD. Det. THELLUNG.

†2112. A. ALBUS L. Bristol, N. SANDWITH; Par, Cornwall, Miss TODD. Det. THELLUNG.

†2114. A. CHLOROSTACHYS Willd., var. PSEUDORETROFLEXUS Thell. = A. POWELLII Wats. Bristol, N. SANDWITH. Det. THELLUNG.

The Chenopods have been determined by Dr Murr.

2117. CHENOPODIUM RUBRUM L., var. PSEUDOBOTRYODES Wats. Frensham, Surrey; Hurst, Berks; Holy Isle, Northumberland, DRUCE. Dr Murr refers them to *botryodes* Sm., but this plant does not appear to be well understood on the continent.

2121. C. URBICUM L., var. INTERMEDIUM Koch. Aberthaw, Glamorgan, Lady DAVY.

2122. C. MURALE L. Barry, Glamorgan [104], R. L. SMITH; Uxbridge, Middlesex, Lady DAVY.

†2123. C. OPULIFOLIUM Schrad. Stoneferry, Hull, Yorks, Miss A. B. COBBE.

2124. C. ALBUM L., var. VIRIDE (L.). Sibford, Oxon; Lichfield, Staffs; Swanage, Dorset, DRUCE. Var. BERNBURGENSE Zchack. Bristol, N. SANDWITH. Var. LANCEOLATIFORME (Murr). Hull, Yorks, Miss M. COBBE; Bradford, Yorks, DRUCE. Var. SUBFICIFOLIUM (Murr). Hull (as var. *serratiforme*), Miss M. COBBE; Cannock Chase, Staffs; Silloth, Cumberland, DRUCE. Var. VIRIDESCENS (St. Am.). Exeter, Mevagissey, Cornwall, Miss TODD; Lichfield, Staffs, DRUCE. Var. GLOMERULOSUM Reichb. Lichfield, Staffs; Sibford, Oxon, DRUCE.

†2124 (2). C. LANCEOLATUM Muhl. Walsall, Staffs, DRUCE.

†2125. C. LEPTOPHYLLUM Nutt. Swaythling, Christchurch, S. Hants, RAYNER. Det. Kew.

2126. C. FICIFOLIUM Sm. Wye, Kent, Miss M. COBBE.

†2127. C. GLAUCUM L. Goonhavern, Cornwall, RILSTONE; Faverham Quay, Kent, Miss M. COBBE.

†2130. C. AMBROSIOIDES L. Bristol, N. SANDWITH.

†2131. C. BOTRYS L. Cardiff, Glamorgan, R. L. SMITH.

†2131 (2). C. STRIATUM Kras. Hull, Yorks, Miss M. COBBE, and as var. EROSUM. × HIRCINUM. Meanwood, Leeds, BUTCHER. × HAYWARDIAE Murr. Oil works, Hull, Miss M. COBBE.

†2131 (4). C. BERLANDIERII Moq. Ware, Herts, DRUCE.

†2135 (5). MONOLEPIS NUTTALLII (R. Sch.) Greene. Loseley, Guildford, Surrey, CLARKE.

2153. ATRIPLEX PEDUNCULATA L. Still in W. Suffolk, STANLEY REDGROVE.

†2153 (10). AXYRIS AMARANTOIDES L. Shalford, Surrey, CHASE; Warlington, Surrey, BEADALL; Tilehurst, Berks, MURRAY.

†2155. KOCHIA SCOPARIA Schrad. Bristol, Mrs SANDWITH.

2168. SALSOLA KALI L., var. TENUIFOLIA Mey. Faversham. Kent. Miss M. COBBE.

†2168 (2). PHYTOLACCA DECANDRA L. Eastleigh, S. Hants, RAYNER; roadside, Malvern, Worcester, TOWNDROW. The older name is *P. americana* L., which dates from the first edition of the *Species Plantarum*.

2184. POLYGONUM AEQUALE Lindm. Silloth, Cumberland; Walsall, Staffs, DRUCE.

2184 (4). P. CALCATUM Lindeb. [Ref. No. 2480]. West End Common, Esher, Surrey, 1921, BRITTON, teste DANSER.

†2191. P. CUSPIDATUM S. & Z. Pitlochry, E. Perth, WEBB; Lichfield, Staffs; Braemore, W. Ross, DRUCE.

†2191 (2). P. SACHALINENSE Schm. Braemore, W. Ross, DRUCE.

†2193. FAGOPYRUM TATARICUM Gaertn. Barry, Glamorgan, R. L. SMITH.

2201. RUMEX SANGUINEUS L. Grange Lane, Blackhill, Glamorgan, WEBB.

*2207. R. MARITIMUS L. Near Falfield, W. Gloster, E. NELMES.

†2210. R. MAGELLANICUS Gris. Avonmouth, Bristol, N. SANDWITH.

†2210. R. OBOVATUS Dans. Possil, Lanark, GRIERSON.

†2216. HIPPOPHAE RHAMNOIDES L. Gairloch, W. Ross, WEBB.

2218. THESIUM HUMIFUSUM DC. Barry, Glamorgan, R. L. SMITH.

†2229. EUPHORBIA VIRGATA W. & K. Greenhithe, Kent, REDGROVE: Radyr, Glamorgan, R. L. SMITH. Det. THELLUNG. Warlingham, Surrey, STANSFIELD; Hassocks, Sussex; Thames, near Wallingford, Berks, HUTCHISON; Station yard, Aylesford, Miss M. COBBE; near Six-mile Bottom, Cambridge, DRUCE.

†2230. E. CYPARISSIAS L. Cholsey, Berks, Miss NEILD.

†2234. E. FALCATA L. Cardiff, Glamorgan, R. L. SMITH. Det. THELLUNG.

2236. E. EXIGUA L., var. RETUSA DC. Stockton, Rugby, *Rugby List*, 1923.

†2243. MERCURIALIS ANNUA L. Glasgow, GRIERSON.

2244. ULMUS MONTANA Stokes, var. MONSTROSA. Near Eyton Bridge, N. Yorks, FLINTOFF.

2246. U. PLOTII Druce. Near Stafford, DRUCE.

†2248. CANNABIS SATIVA L. Patshull, Staffs, Lady J. LEGGE.

†2249. FICUS CARICA L. Chesil Beach, Dorset, a fair sized plant, DRUCE & VAN DE WEYER; near Mumbles Head, Glamorgan, WEBB.

2250. URTICA DIOICA L., var. MICROPHYLLA Hausm. Church End, Finchley, both as a roundish and as an elongated-leaved form. DRABBLE; Brendon, Devon, WATERFALL in *Trans. Dev. Ass.* 78, 1922.

†2253 (5). HELEXINE SOLEIROLII Req. In the drain round Long Ashton Church, N. Somerset, Miss I. M. ROPER; on a wall at Pill (*H. T. Gibbons*), Axbridge Church, Somerset, H. S. THOMPSON; Bassett, S. Hants, RAYNER.

†2258 (2). ALNUS INCANA Medik. Arnside, Westmorland, PEARSALL; Melmerby, Cumberland, Rev. W. W. MASON.

2259. CARPINUS BETULUS L. *Isle of Wight, ex MILLER CHRISTY. Var. PARVIFOLIA Miller Christy. Near Stokenchurch, Oxon, DRUCE.

†*2267. SALIX PENTANDRA L. Leagrave, Beds, *Saunders Fl.* Probably planted.

2269. S. ALBA L., var. VITELLINA (Sm.). Gailey Reservoir, Staffs, DRUCE.

2269. × S. VIRIDIS Fries. A large leaved form, Hardwick House, Oxon, DRUCE and Lady ROSE.

2270. S. TRIANDRA L. Darenth River, Kent, St. J. MARRIOTT but the female catkins from the same locality are S. UNDULATA Ehrh., teste FRASER.

†2272. S. DAPHNOIDES Vill. Gailey Reservoir, Staffs, DRUCE.

2273. S. VIMINALIS L., var. LINEARIFOLIA W. & G. Gailey Reservoir, Staffs, DRUCE.

†2293. POPULUS TACAMAHACCA Mill. Gailey Reservoir, Staffs; Glen Lyon, M. Perth, DRUCE.

†2294 (4). P. LAURIFOLIA Ledeb. Roro, Glen Lyon, M. Perth; Aberdeen, DRUCE.

2296. CERATOPHYLLUM SUBMERSUM L. Brading Water, Whitstable, Kent, DIGHTON.

*2297. HYDROCHARIS MORSUS-RANAE L. In a pithole near Box, Wilts, Mrs COLVILLE.

2303. CORALLORRHIZA TRIFIDA Chat. In plenty on damp places, Culbin Sands, Easterness, PATTON and STEWART.

2306. LISTERA CORDATA Br. Golspie, E. Sutherland, Prof. T. L. GRIFFITHS; Shipley Bridge, Brent, Devon, FURSE.

2308. SPIRANTHES SPIRALIS C. Koch. Under the name, *S. autumnalis*, Prof. Bower, of Glasgow, recorded in *Nature* 185, 1923 the finding of this Orchid in 1921 in two stations about a mile apart "very sporadically in the woods about Carr Bridge." Specimens were not preserved, but "their characteristic smell and spiral spikes interested our table at the hotel. . . I am pretty sure we were not mistaken in the plant. I have known it since I was a boy." On p. 291 of the same journal Miss E. P. Smith, of Edinburgh, says she too found it on Docharn Craig, a small hill (1250 ft.), near Carr Bridge in the summer of 1921. She describes finding "it in the wood which is on the northern side, and its floor is covered with *Vaccinium* spp., mainly *Oxycoccus* mixed in places with *Erica Tetralix* and *cinerea*. Earlier in the season *Pyrola rotundifolia* and *Trientalis europaea* were abundant. Only one species of the *Spiranthes* was discovered although a careful search was made of the whole wood. The specimen was unfortunately lost in its transit to the South." With reference to these records I must say that I have still great doubt of the accuracy of the identification. It is not only such a great extension of the known range of the plant, since *Spiranthes* is not on record for Scotland, but the habitat is so different from its normal one. Moreover, I sent Miss Smith unlabelled specimens of *Vaccinium Vitis-idaea* and *Goodyera repens*, and she recognised them as the plants she recorded as *Oxycoccus* and *Spiranthes*. It may be added that the vernacular name of Cranberry is on Speyside wrongly applied to *Vitis-idaea*. Is it possible that an abnormal specimen of *Goodyera* may have been mistaken by Prof. Bower for *Spiranthes*? It is most unlikely that it should grow in a pine wood on acid soil. But we have another Scottish record in the same paper by Mr J. B. Simpson, who claims to have discovered several specimens in the Isle of Coll, Argyllshire, one of which was sent to a competent botanist, Mr Burgess, of Forres, who corroborated the identification. Both these botanists seem to be acquainted with *Goodyera*, so it would seem that there was one found there. The Coll locality is a more likely one than Speyside, but in answer to my question as to whether it was found on shell-sand Mr Simpson tells me they grew " in peaty soil overlooking beach deposits in part, but sometimes only on gneiss. But the soil may be limey, as there is a good deal of marble in the rocks near." There is just a chance of the Coll plant proving to be *S. Romanzoffiana*, which is, after all, the most likely one to occur. The matter deserves further investigation not only in Coll, but in Easterness. Sir Herbert Maxwell at one time thought he had seen *Spiranthes* in Speyside, but starveling *Goodyera* might have been mistaken for it. On present knowledge I hesitate to include it as a Scottish plant. G. C. DRUCE.

2313. CEPHALANTHERA DAMASONIUM Druce. Near the Gogmagogs, Cambridge, H. K. A. SHAW.

2316. HELLEBORINE VIRIDIFLORA (Reichb.). Wood near Exeter, D. PEGLER.

*2321. ORCHIS MILITARIS L. On the Quenvais, Jersey, Miss VACHELL and T. ATTENBOROUGH. A solitary specimen which had been broken by a passer-by was sent me for examination. On soaking out the flower it proved to be this species, the leaves having the characteristic coumarin odour, DRUCE.

2324. O. MORIO L., var. CHURCHILLII Druce. Tenby, Pembroke, DRUCE.

2326. O. INCARNATA L., b. PULCHELLA Druce. Beadnell, Northumberland, R. B. COOKE; Holmsley Bog, Surrey, J. FRASER in *Gard. Chron.* 347, 1923; Lumsden, N. Aberdeen, WILSON; Braemar, S. Aberdeen; Dunnet, Caithness, DRUCE. × PURPURELLA. Beadnell, Northumberland, COOKE.

2326 (2). O. PRAETERMISSA Druce. Plumpton, Sussex, Miss COTTIS; Chippenham, Cambridge, DRUCE; Darenth, Maidstone, Kent, St. J. MARRIOTT; Stoneham, S. Hants, abundant, RAYNER; Kingsthorpe, York, J. GREEN; Ellers Marsh, Thornton Dale, N. Yorks, FLINTOFF. Var. PULCHELLA Druce. Emdale, N. Lancs, PEARSALL; Beadnell, Northumberland, COOKE; Lumsden, Aberdeen, WILSON; Rescobie, Forfar; Braemar, S. Aberdeen; Tomintoul, Banff; Carr Bridge, Grantown, Easterness; Bonar Bridge, E. Ross; Golspie, E. Sutherland; Dunnet, Caithness; Durness, Smoo, Ledbeg, etc., W. Sutherland; Cnochan, W. Ross, DRUCE.

2326 (2). O. PRAETERMISSA × FUCHSII. Marsworth, Herts, Hon. N. C. ROTHSCHILD.

2326 (2). O. PRAETERMISSA × MACULATA. Carmarthen, HAMER; Cnochan, W. Ross; Dingwall, E. Ross, DRUCE.

2326 (2). O. PRAETERMISSA, var. PULCHELLA × MACULATA. Bettyhill, Durness, W. Sutherland; Cnochan, W. Ross, DRUCE.

2326 (3). O. PURPURELLA Steph. Ireleth, N. Lancs, PEARSALL; Beadnell, Northumberland, COOKE; Braemar, S. Aberdeen, DRUCE.

2327. O. MACULATA L., vera. Inchnadamph, W. Sutherland; Cnochan, W. Ross, DRUCE; Ireleth, N. Lancs, PEARSALL. Var. LEUCANTHA Druce. Arrochar, Dumbarton, Miss G. YOUNG; Altnaharra, W. Sutherland; Braemar, S. Aberdeen, DRUCE.

2327 (2). O. FUCHSII Druce. Ivinghoe Beacon, Bucks, abundant, DRUCE; Marlborough, Wilts, G. PEIRSON; Darenth, Kent, St. J. MARRIOTT; Wye, Kent, Miss COBBE; Cortachy, Forfar, DRUCE.

2327 (3). O. O'KELLYI Druce. *Dunstable Downs, Beds; *Ivinghoe Beacon, Bucks, DRUCE; Charlbury, Oxon, 11½ in. high, POWELL.

2328. O. LAXIFLORA × MORIO = O. ALATA. Still at St. Ouen's Pond, Jersey, *Bot. Soc. Exp.*

*2331. O. HIRCINA Crantz. Near Burnham, N. Somerset, 25 plants scattered over a considerable area but near an unoccupied house. There seems no evidence of its being planted in the garden and thus to have escaped, Miss STEWART, ex W. D. MILLER; near Puddlehinton, Dorset, Mr LOVELACE, ex Mr HERRIDGE; near Hadiscoe, E. Norfolk, the specimen had about 60 flowers on it, H. K. A. SHAW; Border of Wood, Wye, Kent, the third specimen seen there this year, Miss A. B. COBBE.

2335. OPHRYS APIFERA Huds. Near Buildwas, Salop, MELVILLE; *on chalk debris near Magheramorne, Larne, Ireland, Capt. CHASE. See *Irish Nat*, 96, 1923. Var. FLAVESCENS Rost. Charlton Adam, N. Hants, BOYS.

2335 (2). O. TROLLII Heg. Baunton, near Cirencester, Gloster, GREENWOOD; *Brighton, on downs, Sussex, PAYNE, ex Miss COTTIS; *Laugharne, Carmarthen, HAMER; *Seaton, Devon, STANLEY BURR in *Dev. & Ex. Gaz.*

2337. HERMINIUM MONORCHIS Br. Between Hartingdon and Sundon, Beds, *Saunders Fl.*

2338. HABENARIA GYMNADENIA Druce. Lewes, Sussex, H. CARTER; most abundant at Ivinghoe, Bucks, with var. ALBA, as the dense-flowered plant, DRUCE.

2340. H. VIRIDIS Br. Near Presteigne, Radnor, Mrs DEBENHAM.

2350. IRIS FOETIDISSIMA L., var. CITRINA Bromf. Langton Matravers, Dorset, VAN DE WEYER.

†2353. HERMODACTYLIS TUBEROSUS Mill. Flowering at Ludgevan, Cornwall, March 18, 1923, where Mr THURSTON showed it me.

†2354. CROCUS BIFLORUS Mill. *Penrice Green, Glamorgan, WEBB.

†2366. NARCISSUS MAJOR Curt. With the foregoing, in great luxuriance, DRUCE.

†2372. N. BIFLORUS Curt. Ide, Teignmouth, S. Devon, Miss CRESSWELL in *Trans Dev. Ass.*, 1922.

†2390. ASPHODELUS FISTULOSUS L. Warlingham, Surrey, BEADELL; Seaton, Devon, *Trans. Dev. Ass.* 1922.

†2393. ALLIUM AMPELOPRASUM L. Quite naturalised near the Madingley road, Cambridge, Miss G. BACON.

†2394 (2). A. SATIVUM L. Naturalised in a field at Renmore, Galway, Mrs EVANS. Det. THELLUNG; Wiseman's Bridge, near Tenby, Pembroke, T. J. WALL.

2396. A VINEALE L., var. BULBIFERUM Syme. Swalecliffe, Whitstable, Kent, Miss COBBE.

†2401. A. TRIQUETRUM L. Naturalised near Tenby, Pembroke, DRUCE.

†2402. A. CARINATUM L. Upton on Severn, West Gloster, Miss TODD; river above Musselburgh, Edinburgh, FOGGITT.

2403. A. OLERACEUM L. Upton on Severn, W. Gloster, Miss TODD.

2405. A. SCHOENOPRASUM L. Builth, Brecon, Hon. Mrs A. LEITH.

†2407. MUSCARI RACEMOSUM Lam & DC. West Dean, Wilts, H. L. GREEN; Leagrave, Beds, *Saunders Fl.*

†2408. HYACINTHUS COMOSUS L. West Harling Heath, Norfolk, Lady DOREEN FITZROY & Miss DUNLOP; Hayling Isle, S. Wilts, Miss HILLARD.

2410. SCILLA AUTUMNALIS L. Barry, Glamorgan, R. L. SMITH.

†2411 (2). S. HISPANICA Mill. Near Tenby, Pembroke, DRUCE.

*2425. PARIS QUADRIFOLIA L. On an islet in Loch Awe, near Inchnadamph, vide spec., DRUCE. An interesting locality.

2433. JUNCUS SUBNODULOSUS Schrank. Epping Forest, Essex. Miss TROWER.

2435. J. ARTICULATUS L. A monstrosity caused by *Livea juncorum*, Cape Wrath, W. Sutherland, The Rt. Hon. HAROLD BAKER.

2437. J. BULBOSUS L., var. ULIGINOSUS (Fries). Ashdown Forest, Sussex, Lady DAVY; Loch Achray, Perth, Miss TROWER.

†2450. JUNCOIDES NEMOROSUM Morong, var. RUBELLUM (Hoppe) Druce. St Blazey, Cornwall, Mr MEDLEN, ex THURSTON; between Wyndcliff and Tintern, Monmouth, Miss M. COBBE.

*2452. J. PILOSUM Morong. Near St Peter's, Jersey, W. H. JONES.

*2462. SPARGANIUM NEGLECTUM Beeby. Dovey Junction, Montgomery, BARTON.

2478. ELISMA NATANS Buch. Chasetown, Staffs, L. B. LANGMAN.

2489. POTAMOGETON ALPINUS Balb. By the railway between Levisham and Goathland, N. Yorks, FLINTOFF.

2493. × P. GRAMINEUS L., var. WOLFGANGII (Kihl.). Loch of Tankerness, Orkney, JOHNSTON, *l.c.*

2495. × P. NITENS Web., var. SUBPERFOLIATUS Hagstr. Thurso River, Caithness, above the town, DRUCE & WILLIAMSON.

*2508 (2). P. PANORMITANUS Biv. Pwll, Carmarthen, HAMER, teste BENNETT.

*2509. P. RUTILUS Wolfg. Loch of Ayre, Holm, Orkney, JOHNSTON.

*2532. Scirpus sylvaticus L. Westoning Flitwick, Beds *Saunders Fl.*

2545. S. compressus Pers. Bogs near Basingstoke Canal, Woking, Beadell.

2552. Rynchospora fusca Ait. Acharacle, Moidart, Mrs R. McKenna.

*2553. R. alba Vahl. Dovey Junction, Montgomery, Barton.

2557. Kobresia bipartita Dalla Torre. In the Yellow Corrie, Glen Lyon, M. Perth, Druce.

2560. Carex acutiflora Ehrh., var composita. Darenth river, near Shoreham, Kent, M. Horner.

2561. C. vesicaria L. A sterile form from a pasture, Merton, Oxon, perhaps a hybrid with *C. gracilis*, with which it grew, Druce.

2562. C. saxatilis L. With rounder female spikelets than usual, Yellow Corrie, Glen Lyon, M. Perth, Druce.

2564. C. inflata Huds. An extraordinary nearly sterile form. Some of the female spikelets have male flowers at the apex, and some of the male spikelets show male flowers in the centre. The lower female spikes are lax-flowered and are sometimes compound. Sent by Mr Templeman from Cogra Moss, Lamplugh, Cumberland, in 1922.

2566. C. hirta L., var. hirtiformis Pers. Oxley, Watford, Weybridge, Surrey, Trethewy.

2567. C. pendula Huds. Banks of Lune, between Casterton and Barbon, L. Lancs, Pearsall.

2569. C. strigosa Huds. In woods near Radnage, the second known habitat in Oxon, found by Gambier Parry and N. Sandwith.

2570. C. helodes Link. Rozel, Jersey; between Weymouth and Portland, Dorset, Druce.

2573. C. DISTANS L. Charlbury Moor, Oxon, DRUCE.

2574. C. PUNCTATA Gaud. Corbière, Jersey, in Lady Davy's locality, in some quantity, *Bot. Soc. Exp.*

2575. C. FULVA Host. Chippenham, Cambridge, DRUCE.

2576. C. LEPIDOCARPA Tausch. Charlbury Moor, Oxon, DRUCE. × C. XANTHOCARPA Degl. Brittas Pond, Co. Dublin, STELFOX in *Irish Nat.* 39, 1923.

2577. C. OEDERI Retz. Little Frensham Pond, Surrey, BIDDISCOMBE.

2586. C. TOMENTOSA L. Frampton, Gloster, Miss D. CATOR; *Westwell, Oxon, just in the county, N. SANDWITH with GAMBIER PARRY. A splendid New County Record. S. Cerney, W. Gloster, GREENWOOD.

2588. C. DIVERSICOLOR Cr., var. COMPOSITA. Alltnaharra, W. Sutherland, DRUCE.

2611. × C. AXILLARIS Good. Near Cheddar, N. Somerset. Lady DAVY.

2615. C. PAIRAEI Schultz. St. Peter's, Jersey, DRUCE.

2616. C. DIVULSA Stokes. Mont Orgueil, Jersey, DRUCE; Presteigne, Radnor, Mrs DEBENHAM.

2617. C. PANICULATA L. Large stools, 5-6 feet high, in the Scilly Islands, H. DOWNES. Var SIMPLEX Peterm. Hampton Lodge Puttenham, Surrey, BIDDISCOMBE; S. Cerney, W. Gloster, GREENWOOD; × C. BOENNINGHAUSIANA Weihe. *Hothfield Heath, Kent, Miss COBBE; *Hazely Heath, N. Hants, Lady DAVY.

2619. C. DIANDRA Schrank. Odiham, N. Hants, Lady DAVY; Rescobie, Forfar, DRUCE. Var. MAJOR (Kolh.). Druce. Runham, E. Norfolk, B. REYNOLDS.

2623. C. DIVISA Huds., *var. CHAETOPHYLLA Steud. In several places in Surrey. The rhizomes travel at great length in the soil and the crowns are crowded here and there, J. FRASER. This comes nearest the Spanish plant of any I have personally seen from Britain. The plant recently distributed through the *Watson B.E.C.* by Mr H. S. Thompson does not conform to the description of *chaetophylla*.

2628. C. PULICARIS L., forma MONTANA Pugsl. Ledbeg, W. Sutherland, DRUCE.

†2632. PANICUM CRUS-GALLI L. Barry, Glamorgan, R. L. SMITH.

†2634. P. SANGUINALE L. Abundant in the Tomato houses in Guernsey, TOMLIN.

†2637. P. CAPILLARE L. Cardiff, Glamorgan, Miss VACHELL; Radyr, Glamorgan, R. L. SMITH.

†2653. PHALARIS MINOR Retz. Bowling, Dumbarton, GRIERSON. Det. THELLUNG. *Frilford, Berks, DRUCE; Barry, Glamorgan, R. L. SMITH.

†2656 (2). P. ANGUSTA Nees. Possil, Coatbridge, Lanark, GRIERSON. Det. THELLUNG.

2665. ALOPECURUS BULBOSUS Gouan. Rumney Marsh, Monmouth, WADE.

2673. PHLEUM PRATENSE L., var LONGIARISTATUM Parn. Patterdale, Westmorland, Rev. W. W. MASON. Var. NODOSUM L. Boscowen, Cornwall; without awns, Bedminster, Bristol, N. SANDWITH. Var. INTERMEDIUM (Jord.). *Radnage, Bucks and Oxon, DRUCE.

2674. P. ALPINUM L. At 2300 ft. above Crowdundle Beck on the South Side of Cross Fell, about 20 yards from the Westmorland Boundary which is formed by the Beck, W. WILSON.

†2681. P. SUBULATUM A. & G. Glasgow, GRIERSON. Det. THELLUNG.

†2683. Agrostis verticillata Vill. Southwick, Sussex, F. R. Browning, ex Miss Cottis; Meanwood, Leeds, Butcher.

†2690. Polypogon monspeliensis Desf. Southwick, Sussex, Miss Bacon; Christchurch, S. Hants, Mrs Rothwell and Rayner.

2694. Calamagrostis canescens Druce. Near Corfe, Dorset, Druce.

†2697. Deyeuxia filiformis Druce. (*D. retrofracta* Willd.). Bradford, Cryer; Meanwood, Leeds, Butcher.

†2698. Gastridium ventricosum S. & T. Mayboro, Lanark, Grierson.

2699. Apera Spica-venti Beauv. Martlesham, E. Suffolk, H. K. A. Shaw.

*†2700. A. interrupta Beauv. In immense quantity at Frilford, Berks, specimens distributed this year, Druce.

2701. Aira caryophyllea L., var. multiculmis (Dum.). Pyrford, Surrey; Frilford, Berks, Druce.

†2704. Lagurus ovatus L. On a wall, Porthcawl, Glamorgan, Webb.

2712. Deschampsia flexuosa Trin., var. montana (Huds.). Craig Gledsiad, Brecon, Mrs Wedgwood.

2717. Avena fatua L., var. pilosa. Cardiff, Miss Vachell.

†2719. A. strigosa Schreb., sub-sp. glabrescens Marq. St. Ouen's, Jersey, Druce. Var. nigra Marq. Keltney Burn, M. Perth, Druce.

†2720. A sativa L., sub-sp. verna Marq. Swaythling, S. Hants, Rayner; Princes Risborough, Bucks, Druce. Sub-sp. autumnale Marq. Cardiff, Miss Vachell; Hanslope, Bucks, Druce.

2722. A. PUBESCENS Huds. and 2723. A. PRATENSIS L. Cortachy, Forfar, DRUCE.

2724. ARRHENATHERUM ELATIUS M. & K., var. BIARISTATUM (Peterm.) Druce. Par Harbour, Cornwall, L. T. MEDLIN.

†2727. CAPRIOLA DACTYLON OK. On the quay by the Deben, Woodbridge, E. Suffolk, H. K. A. SHAW.

2732. SIEGLINGIA DECUMBENS Beauv., var. LONGIGLUMA Hack. Cheese Wring, Cornwall, L. T. MEDLIN.

2733. PHRAGMITES VULGARIS Druce, var. FLAVESCENS (Cust.). Near Lumsden, N. Aberdeen, W. WILSON.

†2737. CYNOSURUS ECHINATUS L. Southwick, Sussex, Lady DAVY; between Kingwood and Boxhill, Surrey, REDGROVE; Bristol, N. SANDWITH; Welbeck, Notts, GOULDING; Kirkby Lonsdale, Westmorland, TRAPNELL; Bromeswell, E. Suffolk, H. K. A. SHAW.

*2742. KOELERIA ALBESCENS DC. Sands of Barry, Forfar, Lady DAVY. New to Scotland.

†2744 (3). K. PANICEA Domin. Coatbridge, Lanark, GRIERSON. Det. THELLUNG.

†2747. ERAGROSTIS CILIANENSIS V-L. Cardiff, Glamorgan, Miss VACHELL. Det. THELLUNG.

†2748 (7). E. CURVULA Nees. Bradford, CRYER, det. KEW, is det. by THELLUNG as E. CHLOROMELAS Steudel.

†2755. BRIZA MAXIMA L. Exeter, Devon, Miss TODD.

2757. B. MINOR L. Abundant in the Scillies, H. DOWNES.

*2759. POA IRRIGATA Lindm. Braemar, S. Aberdeen, DRUCE.

†2760. P. PALUSTRIS L. Bristol, N. SANDWITH.

2769. P. ANNUA L., a large form near var. AQUATICA. Near Woodbridge, E. Suffolk, H. K. A. SHAW.

2772. Glyceria fluitans Br., var. pedicellata (Towns.). Martlesham, E. Suffolk, H. K. A. Shaw.

2778. G. procumbens Dub. Near the river by a granary at Woodbridge, E. Suffolk, H. K. A. Shaw; near Stafford, with *G. distans and *G. maritima, Reader in *Journ. Bot.* 279, 1923; Folkestone Harbour, Kent, Miss M. Cobbe. Perhaps a hybrid of this with maritima at Hopsham Marsh, S. Devon, Miss Todd.

2782. Festuca adscendens Retz. Hawes, Yorks, Miss M. Cobbe.

2783. F. sylvatica Vill. Melmerby, Cumberland, abundant, Rev. W. W. Mason; Cortachy, Forfar, Druce.

2788. F. membranacea Druce. On tips at Hirwain, in both Brecon and Glamorgan, Webb.

†2794. Bromus rigens L. Naturalised in the Scillies, H. Downes.

†2798. B. madritensis L. Christchurch, S. Hants, Rayner.

*2801. B. erectus Huds. Wren's Nest, Staffs, Druce and Sir R. Curtis; Llwycoed, Brecon, Webb.

†2803. B. unioloides H. B. K. Naturalised in the Scillies, H. Downes; Christchurch, S. Hants, Rayner; Woodbridge, Suffolk, H. K. A. Shaw.

2807. B. pratensis Ehrh., var. multiflorus (Sm.) Druce. Radnage, Bucks and Oxon, Druce.

2811. B. hordeaceus L., var. leptostachys (Pers.) Beck. Between Truro and Malpas, Cornwall, Miss Todd: near Abbey Wood, W. Kent, St. J. Marriott: Glasgow, Grierson; a ramose form at Granton, Midlothian, Fraser. Var. pseudoracemosus A. & G. Killin, Perth, Fraser. Det. Thellung.

†2815. B. macrostachys Desf. Airdrie, Lanark, Grierson.

†2817. B. JAPONICUS Thunb. Par, Cornwall, L. T. MEDLIN, ex THURSTON.

†2821. LOLIUM TEMULENTUM L. Forfar, DRUCE and Lady DAVY; Exeter, Miss TODD; Pembrey, Carmarthen, HAMER.

2824. L. PERENNE L., var. SPHAEROSTACHYUM Mast. Wye, Kent, Miss M. COBBE. Var. VIVIPARUM. St Blazey, Cornwall, L. T. MEDLIN.

2830. AGROPYRON REPENS Beauv., var. LASIORACHIS Hack. Glandyfi, Cardigan, BARTON.

*2846. LEPTURUS INCURVUS (L.) Druce. Shingle, Snettingham, W. Norfolk, LITTLE. If this is true *incurvus* it is an important discovery, since its previous stations have been adventive only.

†2851. HORDEUM JUBATUM L. Quay side by the Deben, near Woodbridge, E. Suffolk, H. K. A. SHAW.

2855. ELYMUS ARENARIUS L. Hayling Isle, S. Hants, Miss HILLARD.

2874. EQUISETUM VARIEGATUM L., between the var. WILSONI and E. TRACHYODON. Glen Cahir, Co. Clare, DRUCE.

2877. ADIANTUM CAPILLUS-VENERIS L. Found at Meathop, Westmorland, in 1902 by Rev. W. W. MASON.

†2895. ONOCLEA SENSIBILIS L. Came up with ferns sent from Dawlish, Devon, ex Miss POMEROY.

2897. DRYOPTERIS CRISTATA A. Gray. Hickling, E. Norfolk, Lady G. CHURCHILL.

*2906. CYSTOPTERIS FRAGILIS Bernh. Bitterne, S. Hants, R. H. C. PACK, ex RAYNER.

*2908. PHEGOPTERIS POLYPODIODES Fée. Bruce Hill, Cavan, G. G. BLACKWOOD in *Irish Nat.* 107, 1923.

2920. OPHIOGLOSSUM VULGATUM L. The type from Bigbreck, Birsay, Orkney, 1923, JOHNSTON.

2924. ISOETES LACUSTRIS L. There is a line of wrack half a mile long at Killin Pier, M. Perth, 3 inches broad and about 1 inch thick, composed of *Isoetes*, all the work of ducks, who are very fond of it. They gobble up the plant, and then make for other lakes and tarns. D. HAGGART.

2933. NITELLA FLEXILIS Ag. Carmarthen, HAMER.

2934. N. OPACA Ag. Presteigne. Radnor, Mrs DEBENHAM.

2950. CHARA CONTRARIA Kuetz and *var. HISPIDULA Braun. The Loons, Birsay, Orkney, JOHNSTON. *l.c.*

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with a [illegible] added
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referred to [illegible]

CONTRIBUTIONS TO THE KNOWLEDGE OF THE GENUS THYMUS.

THE BRITISH SPECIES AND FORMS.

By K. Ronniger, Vienna. *

The kindness of Dr G. Claridge Druce, of Oxford, has made it possible for me to study the abundant material of this interesting genus which his British herbarium contains, a genus at which I have been working for several years.

The British Thymes have been dealt with in recent times by K. Domin and A. B. Jackson (*Journ. Bot.* vol. 46, 1908, p. 33), and by E. F. Linton (*l.c.* vol. 47, 1909, p. 346). As I have arrived at somewhat divergent results, as regards both system and arrangement, I avail myself of an opportunity to state them.

Domin and Jackson give the following species as occurring in England :—1. *T. ovatus* Miller; 2. *T. Serpyllum* L.; 3. *T. praecox* Opiz; 4. *T. glaber* Miller (= *T. Chamaedrys* Fries). To these Linton adds 5. *T. Lövyanus* Opiz, and 6. *T. spathulatus* Opiz.

Domin and Jackson adopt the method proposed by Velenovsky (*Sitzber d. böhm. Akad. d. Wiss.* Prag, 1903), which is based upon the innovation-character. According to this the large section *Serpyllum* Benth. is divisible into three groups: Suberecti, Pseudorepentes, and Repentes:—Suberecti—without creeping sterile offsets; Pseudorepentes—creeping offsets springing from the leaf-axils of the offsets of the previous year, terminated in the following year by an inflorescence; Repentes—the sterile creeping offsets of the previous year grow on as such in the following year.

But this sub-division arbitrarily separates forms that are closely allied; for instance, the species *T. ovatus* Miller and *T. glaber* Miller of the above list, the certain distinction of which is not always easy. Many other instances of the placing in different groups of allied forms by this method could be given. This appears to me to prove that although this mode of classification is certainly of practical use for the purposes of determination and for distinguishing the species, it does not lead to a natural grouping. The property of producing sterile creeping stolons seems, from the phytological point of view, to have been a relatively late acquisition of the genus *Thymus*, for we note that in the most diverse groups of the genus some species develop runners whilst their nearest relatives do not do so.

Domin and Jackson place *T. ovatus* in the Suberecti, *T. Serpyllum*, *T. praecox* and *T. glaber* in the Repentes. The English *T. glaber* Mill., which is identical with *T. Chamaedrys* Fries, cannot, however, by any means be included in the Repentes, for all the specimens that I have seen showed the innovation-character of the Pseudorepentes. Moreover, Briquet (in Schinz & Keller *Flora der Schweiz*, 3rd ed., vol. 2, 1914) has pointed out that *T. Chamaedrys* Velenovsky (which Domin and Jackson have accepted) is not identical with *T. Chamaedrys* Fries. According to the synonymy which Velenovsky himself gives, *T. Chamaedrys* Vel. is a mixture of *T. alpestris* Tausch and *T. Trachselianus* Opiz. The former is most closely related to *T. Chamaedrys* Fries; it is a creeping plant of the Sudetic Mountains and Carpathians, and does not occur in Sweden; the latter is related to *T. praecox* and inhabits the Alps. Furthermore, Velenovsky seems to have included in his "*T. Chamaedrys*" certain forms of *T. Serpyllum*, the inflorescence-axes of which have two rows of hairs, which occur in Scandinavia and in England.

The name *T. ovatus* Mill. should be replaced by the name *T. pulegioides* Linné (*Sp. Pl.*, ed. 1, p. 592). The specimen preserved in the Linnean Herbarium, which came from Montpellier in France, as well as Linnaeus' diagnosis, leave no doubt that the two names are synonymous. Linnaeus' plant, of which I have obtained a photograph by the kind help of Mr C. C. Lacaita, shows a malformation in that the axis of the inflorescence bears a tuft of leaves at its apex; but this is only a proliferation destitute of any systematic significance. Apparently misled by this proliferation, Linnaeus erroneously transferred his species to the genus *Cunila* in the 2nd edition of the *Species Plantarum*.

For photographs of the original specimens of *T. ovatus* Miller and *T. glaber* Miller, I am indebted to the kindness of Dr A. B. Rendle and Mr A. J. Wilmott, whom I now cordially thank.

The species *T. praecox* Opiz and *T. spathulatus* Opiz which are given as growing in England, are characteristic plants of the Austrian flora, with which I am familiar. I have seen the original specimens from the Opiz Herbarium. On this precise knowledge I am of opinion that the two species do not occur in England: at any rate I have not seen any specimen that could be assigned to either of them. A fairly certain character is afforded by the upper teeth of the calyx. In the English forms of *T. Serpyllum* these teeth are always very short, not longer, or only slightly longer, than they are broad at their base; in *T. praecox*, including *T. spathulatus*, they are considerably longer than they are broad. *T. praecox* also has, as a rule, larger leaves, in the sense that the smallest leaves of this species are as large as those of the largest-leaved English forms of *T. Serpyllum* which have been taken for *T. praecox.*

On phyto-geographical grounds, I regard the occurrence in England of *T. Lövyanus* Opiz as quite out of the question: for this species is a typical member of the Pannonic flora, of which I have seen original specimens and which grows in the neighbourhood of Vienna, my place of residence. I have not seen any form from England which would even remotely recall it. *T. Lövyanus* Opiz has the innovation of the Pseudorepentes, thin glabrous leaves about 10-12 mm. long and 4 mm. broad, its flowering shoot is hairy on all sides, the hairs on the upper part being patent and villous, the calyx is 3.5-4 mm. long, covered with long outstanding villous hairs.

With these introductory remarks, I turn to the arrangement of the English forms. It is my conviction that in England only two groups of forms are met with. Each of these can, however, be subdivided into races. They are :—

I. Species collectiva, THYMUS PULEGIOIDES L.

II. Species collectiva, THYMUS SERPYLLUM L.

These are characterised as follows :—

I. T. PULEGIOIDES L., sens. lat. Plant having ‘ sub-erect ’ or ‘ pseudo-repent ’ branching. (I have not seen a ‘ repent ’ form from England, but there are such on the Continent). Flowering-shoots sharply quadrangular below the inflorescence, goniotrichous (that is hairy only on the angles or alternately in two rows), hairs reflexed.*

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*The hairiness should always be estimated from the second internode below the inflorescence, for the uppermost internode has always a tendency to more marked development of hairs.

Leaves of delicate consistence, always glabrous in the English forms. the nervature does not project on the under-side. To this belong the races *T. pulegioides* L. and *T. glaber* Mill.

II. T. Serpyllum L., sens. lat. Plant having always the 'repent' mode of branching. Flowering shoots relatively short, as a rule only 4-7 cm. high, borne in rows on the runners of the previous year. only very rarely terminated by an inflorescence, ending in a sterile tuft of leaves as a rule; they are either hairy all over or goniotrichous (internodes bearing hairs in 4 rows or alternately in 2) but in the goniotrichous forms this distribution of the hairs is not so fully manifested as it is in the group *T. pulegioides* L.; a few downy hairs occur also on the glabrous surfaces of the shoot. Leaves small, usually only 5-7 mm. long, rarely longer, rather thick, rigid, rounded above, with the nervature projecting on the under surface, glabrous or hairy. Inflorescence usually capitate. Here belong the races *T. Serpyllum* L., *T. pycnotrichus* (Uechtr.), *T. lanuginosus* Mill., *T. Drucei* Ronn., *T. neglectus* Ronn., and *T. britannicus* Ronn.

KEY TO THE BRITISH FORMS OF THYMUS.

1a. Leaves of delicate consistence, always glabrous, nervatnre not projecting on the lower surface; the plant never with 'repent' branching; the flowering shoot always goniotrichous (2 or 4 rows of hairs), *T. pulegioides* L., sens. lat.

  2a. Plant 'sub-erect'; stem fairly high, often 20-25 cm.; leaves relatively large, averaging 9 mm. in length and 5 mm. in breadth; inflorescence elongated as a rule, interrupted, the lower verticils remote,.......... ......
  T. pulegioides L., sens. stric. (= *T. ovatus* Mill).

  2b. Plant 'pseudo-repent': stem shorter and thinner, often only ½ mm. thick; leaves small, averaging 6-8 mm. in length and 3-4 mm. in breadth; inflorescence often capitate at the time of flowering, but also frequently elongated, with the lower verticils remote, especially at the fruiting stage,.................................*T. glaber* Mill (= *T. Chamaedrys* Fries).

1b. Leaves of firm consistence, rigid, small, the nervature projecting on the under surface, glabrous or hirsute; plant always with 'repent' branching; inflorescence almost always capitate,......................*T. Serpyllum* L., sens. lat.

  3a. Flowering-shoot hirsute on all sides.

    4a. Leaves glabrous or bearing only a few scattered hairs on the surface.
    T. Serpyllum L.

      5a. Leaves elongate-elliptical, 2-2·5 mm. broad. Type-form..........
      var. *Linnaeanus* Gren. et Godr.

      the internodes very short, ...
      var. *ericoides* Wimm. et Grab., non Borbas.

      upper part of flowering-shoot villose, var. *rigidus* Wimm. et Grab.

      5b. Leaves obovate or elliptical, 3-4 mm. broad,.........................
      var. *silvicola* Wimm. et Grab.

4b. Leaves hairy on the upper surface.

6a. Leaves moderately hirsute ; flowering-shoot with short, reflexed hairs, those of the uppermost internodes being rather longer,... *T. pycnotrichus* (Uechtr.).

6b. Entire plant densely villose with grey hairs which, at least on the uppermost internode, are equal in length to the diameter of the stem,.. *T. lanuginosus* Mill.

3b. Flowering-shoot goniotrichous (two surfaces hairy and two glabrous).

7a. Inflorescence capitate and remarkably large, when hermaphrodite having a diameter of 1½-2 cm.; leaves obovate-elliptical, relatively large, averaging 5-8 mm. long and 3-3½ broad, usually scantily hirsute on the surface, less often almost glabrous,... *T. Drucei* Ronn.

7b. Inflorescence capitate and of medium size, when hermaphrodite at most 1½ cm. in breadth ; leaves smaller and narrower, mostly only 1½-3 mm. in breadth.

8a. Leaves glabrous or with only scattered hairs on the surface, *T. neglectus* Ronn.

8b. Leaves hirsute on the surface,. ....*T. britannicus* Ronn.

DESCRIPTION OF THE SPECIES AND FORMS.

I. Species collectiva, T. PULEGIOIDES L., sens. lat.

1. T. PULEGIOIDES L. Sp. Pl., ed. 1, p. 592 (1753). Syn. : *T. ovatus* Miller Gard. Dict., ed. 7, No. 7 (1759). Plant 20-30 cm. high, sterile shoots erect, no creeping sterile stolons. Stems nearly 1 mm. thick. erect or ascending, springing many together from a robust woody root; hairs variously distributed or confined to the angles; hairs retrorse. Leaves ovate-elliptical, broadest in their lowest third, obtuse or rounded; margins convex or very convex; narrowed at the base; glabrous on both surfaces, ciliated at the base: rather thin; nervature not projecting; 7-10 mm. long, 4-6 mm. broad. Inflorescence ± spicate, the upper verticils close together, the lower remote. Calyx 3-4 mm. long, densely hairy, but less so on the dorsal side, which may be almost glabrous; the upper as well as the lower calyx-teeth always bear long cilia : the upper calyx-teeth longer than broad.

A form of *T. pulegioides* L. having short inflorescences and more ovate leaves, is var. *vulgaris* Wimm. et Grab. Fl. Siles, II, i, 163 (1829). By its sub-erect habit, thick stems, and larger leaves, this form is distinguishable from *T. glaber* Mill.

Westward Ho, N. Devon ; Dover, Kent ; Harefield, Middlesex ; S. Hinksey, Berks (1889); Beckley, Oxon ; Hyde Heath, Bucks ;

Andoversford, Gloster; Harleston, Northants, 1873; Mocktree, Stafford.

2. T. GLABER Mill. Gard. Dict., ed. 7, No. 6 (1759). Syn.: *T. Chamaedrys* Fries Nov. Fl. Suec., ed. I (1814) p. 35; ed. II (1828) p. 197. Plant 10-15 cm. high, often smaller, of 'pseudo-repent' habit, the creeping runners mostly short. Stems thinner than in *T. pulegioides* L. mostly about ½ mm. thick, numerous, branched, prostrate at the base; hairs in 2 or 4 rows on the sharply quadrangular stems. Leaves thin, broadly lanceolate, rounded above, rather abruptly narrowed at the base, which is ciliate, whilst both surfaces are glabrous; venation not projecting on the under surface; 6-8 mm. long, 3-4 mm. broad. Inflorescence spherical or spicate (f. *capitatus* and f. *verticillatus* Lge. Haandb. i.d. Danske Flora, ed. 1, 1851, 357). Calyx 3 mm. long, densely hirsute, but less so on the dorsal side, which may be almost glabrous; the upper calyx-teeth bearing cilia as long as those of the lower; the upper calyx-teeth usually short, not longer than broad. Here belongs the var. *gracilicaulis* Ronn., with very delicate stems, and small leaves only 4-6 mm. long and 2-3 mm. broad.

Widely distributed in Britain. Twickenham Hill, N. Somerset (I. M. Roper, as *subcitratus*); Apesdown, Isle of Wight, (C. E. Palmer, 1888); Cranbourne Chase, Dorset; Hook Common, N. Hants (C. E. Palmer, 1886); Highnam, Canterbury (C. E. Palmer, 1894); Cuckfield, Sussex, 1908; Englefield Green, Pyrford, Surrey; Walden chalk-pit, N. Essex; Galleywood, S. Essex [2012-2013], (G. C. Brown); Langley, Welwyn (Blake, 1820), Hitchin, Ware, Herts; Harefield, Stanmore Heath, Middlesex; Tubney, Brimpton Common, Wytham Wood, Berks; Seer Green, Chenies, Fawley, Whaddon, Hyde Heath, Bucks; Peppard Common, on chalk rubble at Oxford, Oxon; Cosgrove, Northants; Somersham, E. Suffolk [1620], (Brown); Great Doward, Hereford; Billesdon, Coplow, Leicester (Horwood, referred to *ovatus*, var. *subciliatus*, by Jackson in *B.E.C.* 363, 1915); Lerwick, Shetland.

Forma *verticillatus* (Lange). Stow Wood, Oxon.

Fl. albis. Galleywood, S. Essex (Brown).

Forma *gracilicaulis* Ronn. Welwyn, Herts; Apesdown, Isle of Wight; Stanmore, Middlesex.

II. Species collectiva, T. SERPYLLUM L., sens lat.

a. Flowering shoots hairy on all sides.

3. T. SERPYLLUM L. Sp. Pl. II (1753), p. 590; Fl. Suec., ed. II, (1755) p. 208; Fries Nov. Flor. Suec. ed. II (1828), p. 195. Rootstock elongated, creeping, from which spring the long creeping main axes; each main axis terminated by a sterile prostrate shoot, and bearing sterile lateral shoots. Flowering shoots low, only 4-7 cm. high, springing in rows from the stolons of the previous year, hairy all over. Leaves small, rather thick, stiff, with seven nerves (midrib with three nerves on each side) which project on the under surface, narrowly elliptical or elliptical-ovate, rounded above, cuneate below, 4-6 mm. long, 2-4 mm. broad, glabrous on both surfaces, ciliate at the base. Inflorescence capitate, rarely somewhat elongated, at most 1½ cm. in diameter (in hermaphrodite specimens). Calyx coarsely hairy, 3½-4 mm. long, the upper teeth short, as broad as long, with long cilia.

Here belong:—var. *ericoides* Wimm. et Grab. Fl. Siles II. i. 165 (1829) non Borbas Symb. ad Thym. Europ. Internodes very short, leaves very small; Little Culrannoch, Forfar, 1916.

Var. *rigidus* Wimm. et Grab., *l.c.*, p. 166. Stems villose above, with patent hairs; leaves remote, 2-2½ mm. broad; St Cyrus Cliffs, Kincardine.

Var. *silvicola* Wimm. et Grab, *l.c.*, p. 166. Leaves obovate or elliptical, remote, 3-4 mm. broad.

Albecq, Guernsey (Barton [126]); St. Brelade's (Piquet, 1851), St Aubin's, Jersey, 1906; Polruan, Cornwall (C. E. Palmer, 1887); Wychwood, Oxon; Westbury, Bucks; Colley, Weston, Northants; Balsall Common, Warwick; Clifden, Roundstone, Galway. The MS. states—The glabrous-leaved typical *T. Serpyllum* is not common in Britain.

4. T. PYCNOTRICHUS Uechtritz pro var. *T. Serpylli* apud Ph. Schube Fl. v. Schlesien (1904) p. 331. Allied to *T. Serpyllum* L. Main axes long, creeping, terminated by a sterile prostrate shoot, and bearing sterile prostrate lateral shoots. Flowering shoots low only 4-7 cm. high, springing in rows from the stolons of the previous year, covered all over with short retrorse hairs, those on the uppermost internodes being somewhat longer. Leaves small, rather thick, stiff, 7 nerved, the nerves projecting on the under surface, narrowly

elliptical or elliptical-ovate, cuneate at the base, hairy on the surface, 4-6 mm. long, 2-3 mm. broad. Inflorescence spherical, rarely somewhat elongate, at most 1½ cm. in diameter (in hermaphrodite specimens). Calyx with coarse villous hairs, 3-4 mm. long, the upper calyx-teeth short, about as long as broad, with long cilia.

St. Aubin's, Jersey; Polruan, Cornwall; Abbotsbury, Chesil Beach, Dorset; Uphill, N. Somerset, 1904; Freshwater, Isle of Wight; Saffron Walden, N. Essex (Bullock, 1891); Englefield Green, Surrey, 1897; Langley, Herts (Little, 1912); Harefield, Middlesex; Tubney, Wytham, Berks; Peppard, Oxon; Chenies, Chalfont, Whaddon, Bucks; Barry Isle, Glamorgan (Wade); Harleston, Northants; Balmullo, St. Andrews, Fife; Duns, Berwick; Elibank, Selkirk; Thornielee, Peebles; Struan, Perth; Aviemore, Easterness; Glen Spean, Westerness; Braemore, Elphin, W. Ross; Cnochan, W. Sutherland; Lerwick, Shetland; Cavehill, Belfast.

Two specimens of *T. pycnotrichus* (Selkirk) are remarkable in possessing elongated upper calyx-teeth and at the same time very narrow leaves. Since all the other British specimens that I have seen belonging to the form-group of *T. Serpyllum* have short upper calyx-teeth, I can only regard this case as one of individual deviation, and as not of systematic importance. The occurrence may perhaps be regarded as atavistic, which would indicate that all the British races of *T. Serpyllum* are descended from a primitive form of the more southern *T. praecox*.

5. T. LANUGINOSUS Miller Gard. Dict., ed. 7. No. 8 (1759) Allied to *T. Serpyllum* L. Main axes creeping, terminated by a sterile prostrate shoot, more rarely by an inflorescence, and bearing sterile prostrate lateral shoots. Flowering shoots low, only 4-7 mm. high, springing from all sides of the stolons of the previous year, villous, the hairs on, at any rate, the highest internodes being as long as the diameter of the stem. Leaves small, rather thick, stiff, 7-nerved, narrowly elliptical or elliptical-ovate, cuneate at base, densely covered with grey villosity like the rest of the plant, 4-5 mm. long, 2-3½ mm. broad. Inflorescence spherical or somewhat elongated, at most 1½ cm. in diameter (in hermaphrodite specimens). Calyx densely villous, about 4 mm. long, the upper calyx-teeth short, about as long as broad.

Sapperton, Gloster, 1911; Snowdon, Carnarvon, 1917.

Mr A. J. Wilmott has recommended that the name *T. lanuginosus* should be entirely discarded (*Journ. Bot.* vol. 61, 1923, p. 136). The reason he alleges is that in Miller's herbarium in the British Museum there is a plant which absolutely does not correspond to the diagnosis. According to Wilmott there is only the form common on the Continent, *T. Serpyllum*, v. *angustifolius* (Billot No. 828, Schultz No. 1844, determined by Wilmott, of which I could not get a photograph). Since Miller mostly based his diagnoses on specimens cultivated in his garden, it may be assumed that he had in his garden a plant corresponding to the description. Miller definitely assigns the Forest of Fontainebleau near Paris as the locality for his plant. It appears to me that the question to be settled is whether or not there exists in Central France a plant that agrees with Miller's description. From the abundant material from France that I have seen, I find that only two form-groups are represented in the northern half of that country (including Paris and Fontainebleau), as also in England, namely the form-group of *T. Serpyllum* and that of *T. pulegioides* L. It is only in southern France and in the Alps that other form-groups are to be found. Each of these two groups includes extremely hirsute forms. Miller's description makes it quite clear that the plant in question belongs to the group *T. Serpyllum*, as is shown by the following quotations :—" Thyme with creeping stalks " ; " stiff leaves " ; " flowers growing in heads " ; " has trailing slender stalks " ; " the leaves are stiffer than those of the other sorts." The repeated mention of the creeping habit and of the stiff leaves is sufficient proof that the reference is to a grey hoary plant related to *T. Serpyllum* which actually grows in northern France and has also been found in England. Though it be admitted that the name *T. lanuginosus* of Borbas, H. Braun, Velenovsky and other authors has been applied to highly hirsute forms of *Thymus* belonging to quite other groups, yet I do not see that that is any reason for discarding the name. Were that the case it would be necessary to replace a large number of the *Thymus* names by new ones, without any apparent advantage.

b. Flowering shoots glabrous alternately on two sides.

6. T. Drucei Ronniger. Allied to *T. Serpyllum*. Main axis long, creeping, terminated by a sterile prostrate shoot and bearing

sterile prostrate lateral branches. Flowering shoots low, 4-7 cm. high, springing in rows from the stolons of the previous year. goniotrichous (that is alternately glabrous or nearly so on two sides), the uppermost internode usually more densely hirsute. Leaves small, rather thick, stiff, 7-nerved, the nerves projecting on the under surface, broadly lanceolate, broadly elliptical to obovate, cuneate at base, the surface glabrous or scantily hirsute, the larger 5-8 mm. long and 3-3½ mm. broad. Inflorescence spherical, rarely somewhat elongated, with large flowers, diameter 2 cm. or more (in hermaphrodite specimens). Calyx 4 mm. long, densely villous, but glabrous on the dorsal surface. Upper calyx-teeth short, 1 mm., about as long as broad, with long cilia.

Sapperton, Gloster; Snowdon, Carnarvon, 1919; Port William, Wigton; North Berwick, Haddington; Ben Lawers (Bishop Mitchinson); Killiechonan, Rannoch; Ben Laiogh, M. Perth; West Corrie, Clova, Forfar; Ben Laiogh, Argyll; Ballater, S. Aberdeen; Sligachan [2763], Glen Brittle, Skye [in this place it verged toward *neglectus*, G.C.D.]. [To this G.C.D. refers a specimen from W. Malvern, Hereford, V. Murray, 1922].

I have seen a specimen of *T. Drucei* from Tromsö, Norway, in the Herbarium of the State Museum in Vienna.

T. Drucei always gives the impression of an alpine plant and looks very much like many forms of the Alps, such, for instance, as *T. Trachselianus* Opiz, but the latter is always distinguishable by its long upper calyx-teeth.

7. T. NEGLECTUS Ronniger. Allied to *T. Serpyllum*. Main axis long, creeping, terminated by a sterile prostrate shoot and bearing sterile prostrate lateral branches. Flowering shoots 3-9 cm. high, springing in rows from the stolons of the previous year, goniotrichous, that is alternately glabrous or nearly so on two sides, the lower internodes often quite glabrous. Leaves small, rather thick, stiff, 7-nerved, nerves projecting on the under surface, narrowly elliptical or elliptical-ovate, rounded above, cuneate at base, 3-5 mm. long, 1½-2½ mm. broad, glabrous on both surfaces, ciliate at the base. Inflorescence spherical, rarely somewhat elongated, at most 1½ cm. in diameter (in hermaphrodite specimens). Calyx coarsely hairy, 3½-4 mm. long, upper calyx-teeth short, about as long as broad, with long cilia.

Shepherds (with *Euphrasia Vigursii*), Cornwall; Chesil Beach. Dorset; Uphill, N. Somerset; between Odiham and Upton Grey, N. Hants (C. E. Palmer); Bretch, Gibraltar Rocks, Oxon; Halford, Devon (Townsend); Lighthorne, Warwick (C. E. Palmer, 1851); Caerphilly, Glamorgan (Wade [n. 33]); Castle Kennedy, Wigton, 1883; Corrie, Dumfries; Gourock, Renfrew (Matheson, 1846); Tummel, M. Perth; Boat of Garten, Easterness; Tomintoul, Banff (this is Marshall's var. *prostratus* [n. 2894]); Sligachan, Skye ([n. 2894], Druce, 1915); Bealach nam Bo, W. Perth; Tain, E. Ross; Golspie, E. Sutherland; Derrynane, Co. Kerry, 1906.

It is a very interesting observation that the form-group of *T. Serpyllum* L. in England shows a tendency to the development of forms having goniotrichous (hairs in two rows) flowering shoots. This has proceeded so far that even the specimens in the Druce Herbarium which I have designated as *T. Serpyllum* L., sens. strict., are not so completely holotrichous (uniformly hirsute) as is the case in, for instance, specimens from Germany. I have never seen a specimen of *T. Serpyllum* from Germany which was not completely holotrichous. The distinction of *T. pulegioides* (*ovatus*) as well as of *T. glaber* (*Chamaedrys*) from *T. Serpyllum* can therefore be very easily made in German plants on the simple character of the distribution of the hairs on the shoots, but it is more difficult to make in the case of English plants. The consequence is that many English specimens of goniotrichous forms of *T. Serpyllum* have been wrongly determined as *T. Chamaedrys*, and the erroneous conception of *T. Chamaedrys* by Velenovsky (as also by Domin and Jackson) is probably attributable in part to this cause.

Goniotrichous races (mostly mountain plants) of *T. praecox* have long been known. I may mention *T. Trachselianus* Opiz (not Briquet) and *T. polytrichus* Kerner. The oceanic climate of England evidently produces effects like those of the climate of the Alps. Inasmuch as the goniotrichous races of *T. Serpyllum* have not hitherto been noticed, I find it necessary to establish three new systematic units—*T. Drucei*, *neglectus*, and *britannicus*.

Many specimens from England which show the characters of *T. Serpyllum* but are also goniotrichous have been regarded by collectors as hybrids, either *T. Serpyllum* × *Chamaedrys* or *T. Serpyllum* × *ovatus*, which is quite conceivable. But since these plants differ from *T. Serpyllum* and its forms only in the distribution of the hairs on the shoots, and show, moreover, no relation to the group of *T. pulegioides*, there is no question of their being hybrids. Furthermore these forms are very widely distributed in England, a fact that is inconsistent with their being hybrids.

8. T. BRITANNICUS Ronniger. Allied to *T. Serpyllum*. Main axis long, creeping, terminated by a sterile prostrate shoot and bearing sterile prostrate lateral branches. Flowering shoots 2-7 cm. high, springing in rows from the stolons of the previous year, goniotrichous, that is alternately glabrous or nearly glabrous on two sides, ± densely villose on the other two sides. Leaves small, rather thick, stiff, 7-nerved, nerves projecting on the under surface, lanceolate, narrowly elliptical or elliptical, rounded above, base cuneate, 4-6 mm. long, 1½-3 mm. broad, hirsute on both surfaces. Inflorescence spherical, rarely somewhat elongated, at most 1½ cm. in diameter (in hermaphrodite specimens). Calyx coarsely hairy, 3½-4 mm. long, upper calyx-teeth short, about as broad as long, with long cilia.

Vazon, Guernsey (Barton [125]); Torbryan, Devon (Lightfoot 1837); Swanage, Weymouth, Dorset; Telscombe, Rottingdean, E. Sussex; S. Margaret's, Kent; Hinksey, Berks; Oxford, on chalk-rubble, Bullingdon, Oxon; Plain Wood, Northants, 1873; Cold Knap, Barry, Glam. ([n. 31] Wade); Criccieth, Carnarvon (Bailey); Harlech golf links ([132, 135, 136, 137, 141], Fairbairn Sands [132] Barton); Merioneth; Buxton, Derby; Newton Stewart, Mull of Galloway, Wigton; Selkirk, Ferrygate Links, E. Lothian; Ben y Vrackie, E. Perth; Ballater, S. Aberdeen; Bealach nam Bo, W. Perth; Loch Luichart, W. Ross; Melvich (as *prostratus*, Marshall); Ben Hope, W. Sutherland; Thurso, Caithness; Hoo Hill, Balta, Shetland; Blackhead, Co. Clare; Clifden, Galway; Ben Bulben, Sligo; Portrush, Antrim.

T. britannicus is often cultivated in gardens on the Continent. I have seen specimens from Holland, from the botanical garden at Innsbruck, and from that at Brünn.

T. arcticus Durand (*T. Serpyllum*, var. *arcticus* Durand apud Kane Arch. Explor. 1853-55, app. xviii, 459, 1856) = *T. Serpyllum*, var. *prostratus* Hornemann (Grah's Reise, 1832, p. 192, nomen solum) apud Lange Consp. Florae Groenlandicae I, 80 (1880); III,

688 (1892). A circumpolar race of *T. Serpyllum* standing very near to *T. britannicus.* It differs, however, in its always very small, elliptical to broadly elliptical leaves, which have only 5 nerves. The flowering shoot of *T. arcticus* is goniotrichous as a rule, but specimens occur which are only imperfectly so.

HYBRIDS.

9. T. PULEGIOIDES × SERPYLLUM (T. CELAKOVSKYANUS M. Schulze Mitteil. Bot. Ver. Jena viii., 1890, p. 39). This plant differs from *T. pulegioides* in that the hairs on its shoot are indistinctly two-rowed and by its small leaves with thicker nerves; from *T. Serpyllum* by its usually elongated inflorescence, by the higher growth of the flowering shoot, and by the exclusively lateral short sterile stolons. The leaves are glabrous, but the marginal ciliation is usually more marked than in *T. pulegioides.*

Kew, Surrey; Swaffham, Norfolk; Killiechonan, Loch Rannoch, M. Perth.

10. T. PULEGIOIDES × PYCNOTRICHUS (T. HENRYI Ronniger). This plant differs from *T. pulegioides* in that the hairs on the shoot are indistinctly two-rowed, and by the small, scantily hirsute leaves with rather thicker nerves; from *T. pycnotrichus* by the elongated inflorescence, the higher growth of the flowering shoot, and by the exclusively lateral sterile stolons.

Telscombe, E. Sussex; Arthog, Merioneth (Barton [n. 134] see *Rep. B.E.C.* 363, 1915); Newton Stewart, Port William, Wigton.

11. T. PULEGIOIDES × VULGARIS (a cultivated plant). In the Druce Herbarium there is a specimen of this frequently cultivated hybrid from the Hills and Hollows (once a quarry), Northampton. 1873, but it must either have come from a garden, or it is a garden escape. This plant differs from *T. pulegioides* in that the shoots are downy even on the more glabrous sides, and in that the more deltoid leaves, which narrow from the lower third towards the apex, are not quite glabrous but are covered with minute papillae, and in the downy calyx with a ciliate upper lip. It differs from *T. vulgaris* by the ciliate leaf-bases, the almost glabrous leaves, the somewhat uneven hairiness of the shoot, and by the longer and more acute upper calyx-teeth.

On the evidence of a photograph of the original specimen in the Persoon Herbarium, for which I am indebted to Dr Kloos, Jr., of Dordrecht, I have come to the conclusion that the oldest name for this hybrid is *T. citriodorus* Pers. Syn. ii., 130 (1807) pro var. *lanuginosi*. All the later authors (Schreber 1811, Link 1822, Wimmer 1829) intended to describe the same plant under the name *T. citriodorus*, even though it is mostly impossible to gather from their diagnoses what exactly was meant.

PERIODICAL APPEARANCE OF PLANTS.

By E. Almquist.

From my childhood I have always looked at the burnt spots in our woods to find the beautiful *Geranium bohemicum*. I had occasionally observed that the plant appeared where the spot had happened to be burnt and disappeared after flowering. I never forgot this marvellous plant.

The species is widely spread in Sweden. It is supposed to be rare, but in many districts it is rather common. In order to find it one must examine all the places where it may appear. Formerly it grew on burnt woodlands and in other burnt woods. Now-a-days it appears chiefly on small spots where brushwood is burnt, but sometimes also on new tilled lands and on naked ground where the turf has been taken off. The unexpected appearance and sudden disappearance is always very striking.

Not until the year 1897 was I able to solve the riddle. I found out that the seeds do not germinate without heat. They will rest unchanged in water a whole summer, but after heating the water, say to 50 degs. C., the seeds quickly swell to double their size, and then they germinate freely everywhere. The sunbeams can produce warmth enough on naked ground.

It is stated by experiments that the dry seeds live at least 50 years. Thus they rest in the ground, covered by grass, turf, or moss until they are heated by fire. When the cover is removed, the sun also works upon them. In the ashes the plant grows luxuriantly and produces seeds abundantly. By next year the growth is usually over, and the seeds rest until the next burning.

Jordan discovered new sub-species even among very rare plants. Really *G. bohemicum* grows sometimes on the same burnt spot together with *G. deprehensum*, a new constant species, very similar to the old form, but well discernible by its smaller seeds, cotyledons without incision, narrower lobes of the leaf and red stigma. Thus it is easy to recognise in all periods. Moreover it is very sensitive to the winter season and other influences. I have found the new form rather abundantly in two districts at the Baltic Sea.

As far as I know, such periodical appearances are not sufficiently studied in, for instance, *Sinapis*. Formerly it happened very often that *Sinapis* and *Raphanus* appeared copiously in the cornfields. The peasants believed in a generatio spontanea or in a transmutation or degeneration of the sowed corn. I suppose the seeds of these plants will remain a long time in the ground, but when brought to the surface they germinate through the higher temperature or through the plentiful access of oxygen. Probably many plants follow the same development as *G. bohemicum*. Of course, the circulation to new places is the main point for the periodicity of many plants.

NOTES ON BRITISH MINTS.

By J. Fraser.

My earliest recollection of Mints was *Mentha aquatica* on the banks of streams, *Mentha arvensis* in the cornfields in the sixties of last century and the universally cultivated *M. rotundifolia* and *M. piperita* in gardens during the same period. Later, in the same decade, I found *M. spicata* on the banks of a stream down which it may have come from a distant garden when the stream was in flood. Its scent to me was acrid, and this indicated a new find for me. Down stream in 1874 I found it as an outcast from the local manor garden.

M. rotundifolia varies chiefly in hairiness. If is often an evident escape from gardens in Surrey and Kent. On a hill in Kincardineshire I have seen it surrounded by heather and pine trees, where a habitation had been, but not a stone of the building remained. On the banks of the River Towy, Carmarthen, and at

Pennar, near the Pembroke Docks, it was far less shaggy than usual, but seemed quite native. In gardens it is sometimes sub-glabrous, without other difference. At Kings Newton, Derbyshire, by a dry roadside, it was grey and tomentose. This species hybridises freely with *M. spicata*, but *M. crispa* L. (*M. rotundifolia* × *spicata*) I have only seen in gardens. It is a monstrous form with broad, sub-glabrous leaves, with the venation radiating mostly from the base, and having a very stout inflorescence. It is quite distinct from *M. viridis* L., var. *crispa* Benth., with narrow crisped leaves and slender inflorescence. I have another *M. rotundifolia* × *spicata* from waste ground, Swanage, and a third from The Dour, New Aberdour. Both these have broad, rugose, sub-glabrous leaves with a cordate base. The latter has slightly less cordate leaves, and darker flowers, sufficient to show they are different seedlings, and evidently are of British origin. I have seen the same hybrid from the banks of the River Tay and from Switzerland. The specimen from the Tay was labelled *M. hercynica* Roehl. by J. G. Baker. A fourth hybrid is fairly frequent in Surrey gardens, where it does duty for Spearmint. It differs from the latter in having shorter, less acuminate leaves, and more hairy bracts. The leaves are distinctly rugose.

M. longifolia Huds. is very uncommon in Surrey but I have an outcast from Ranmore Common which is quite like the sheet of Linnaeus, labelled *M. sylvestris*. From Nutfield Marsh, Surrey, I have a sheet which is remarkable for the depth of the acute or acuminate serrations of the leaves; but under cultivation the serrations are not so long, and more nearly approach those of specimens I have from Leybourne; the Potteries; Aylesford and Smerth, in Kent; and from Wargrave, Berks. All these forms I consider *M. longifolia* Huds., var. *nemorosa* (Willd.), which is generally regarded as the most common form of the species. I have seen Dr G. C. Druce's specimens of *M. longifolia* × *rotundifolia* × (*longifolia* × *spicata*) = × *M. villosa* Huds. from two localities in Forfarshire. and one from E. Gloucestershire. I have it only from a garden at Ealing. An unflowered specimen I have growing in the garden seems a form or relative of this but has much larger and more rounded leaves. It came from a Nursery at Milton, Stoke-on-Trent, under the name of Duke Michael Mint.

The typical *M. spicata* L. I have found only in one spot near Leatherhead, Surrey, and by the roadside, and in the field, foot of the Boxley Hills, Kent, in a quasi-wild state.

M. piperita, collected at Tigh na Circe Fraoich, near Glenogle Head; Dochart Bridge, Killin, Perthshire; New Aberdour Beach, Aberdeenshire; between Pennenden Heath and Boxley, Maidstone; and at Emscote, near Warwick, is remarkably constant and typical for a supposed hybrid (*M. aquatica* × *spicata*). At the first named station it was spread over about an acre of marshy, mountain meadow alongside a stream. I had a root of a Mint sent me by a correspondent from Earthcott, Alveston, W. Gloucestershire, in the Valley of the Severn, and this proved to be *M. piperita* L., var. *vulgaris* (Sole), which is evidently fairly common in the west of England, and was spread over a wide area there. I have *M. piperita* L., var. *citrata* (Ehrh.) Briquet, from Northaw, Herts, by way of Mr C. E. Salmon's garden. Specimens I have seen from other places are remarkably uniform.

M. aquatica L. in the form *hirsuta* Huds. is one of the most widely distributed of British Mints, and is one of the most variable species both in the form of its leaves and amount of hairiness making it difficult sometimes to draw a line between the type and the var. *subglabra* Baker. The inflorescence also varies with one to five verticillasters, the lowest one or two pedunculate. I have long and short leaved forms; cordate leaved forms, densely and sharply serrate or nearly orbicular forms; small and lanceolate to oblong forms; large oblong and lanceolate forms; and sometimes brown or violet coloured forms from deep stagnant mud. The var. *subglabra* is sometimes red when growing out of water, to which this variety is partial. Names have been given to some of the above forms, such as *M. aquatica minor* and *M. aquatica major* by Sole, but the height of his plants seems to be his chief distinction and, as I have not cultivated this group, I am dubious about the permanency of stature. *M. capitata* Opiz and *M. pedunculata* Pers. seem more definite appellations.

× *M. verticillata* Huds. (*sativa* L.) is one, if not the most variable, of hybrid British Mints, and more of them have been named than I have collected. The var. *paludosa* (Sole) has sometimes scattered verticillasters on the lateral branches. This, the type, and the var. *subglabra* all have broad leaves, rounded or subtruncate at the base. *M. verticillata* Huds., var. *subspicata* Becker, is similar, but has a sub-spicate inflorescence, with short bracts. All these forms take after the *M. aquatica* parent in the form of the leaves; but *M. verticillata*, var. *acutifolia* (Sm.) H. Braun has the leaves tapered to both ends as in *M. arvensis*, and in this respect is so distinct that it should have more recognition in British floras and other literature relating to Mints. I have wild and cultivated specimens from seven colonies in the Valley of the River Medway, Kent, close to the River. Three of them are albinos, and one has the short hairs on the pedicels sharply deflexed, though they should be spreading according to Smith's description of his species. He had seen only two sheets from which to make his description—one from Miller's herbarium, and another in Buddle's collection, so that, at most, he could have seen only two individuals. He had no doubt as to the affinity of his species with *M. sativa* L. I have seen a sheet of *M. verticillata*, var. *acutifolia*, in Dr G. C. Druce's collection with glabrous pedicels, and some that were much more hairy than Smith's type. I have three of these hairy forms from Surrey, and it is doubtful whether Smith's description could be made to include them or not. One of these is extremely hairy and, as it has only a few congested verticillasters whether wild or cultivated, it seems worthy of being considered a distinct variety or forma. It is not confined to Surrey.

Of the forms coming under × *M. pubescens* Willd. I have collected only one form in a colony of *M. piperita*, on the banks of The Dour, New Aberdour, and the similarity of the two is so great that I have looked upon the hybrid as *M. aquatica* × *piperita*. In the wild state the leaves are narrow, but broader than in both in the cultivated state. The hybrid differs in having hirsute or shaggy stems, hairy leaves, and very hirsute pedicels. This seems very different from *M. hircina* Hull, which has the leaves green and subglabrous above, and hairy beneath. *M. longifolia* is not recorded from Aberdeenshire in "Topographical Botany," and I have never seen it in gardens there. *M. palustris* Sole is a very different looking plant. However, the matter is still *sub judice*.

I have only cultivated specimens of × *M. gentilis*, *M. gentilis*, var. *Wirtgeniana*, and *M. gentilis*, var. *variegata*. *M. cardiaca*

Baker I gathered in a quasi-wild state near Ripley, Surrey, in 1901, and have seen it on Limpsfield Common, Surrey, but think both had been old garden escapes. × *M. rubra* Sm. is plentiful in Surrey, but particularly to the south of the North Downs. Usually it is a very glabrous Mint and one of the most vigorous, growing to the height of 2-4 ft. At Westend, in clay soil, it assumed a stunted condition, with yellow-red leaves, and sub-spicate inflorescence. An unusually hairy form, with sub-spicate inflorescence, and ovate (not round), more acuminate bracts, is widely spread on Holmwood Common. The sub-spicate inflorescence may be due to situation. When growing in water, and afterwards dried, this species is difficult to distinguish from *M. gentilis*, but its long, tubular calyx usually separates it from *M. gentilis* with its short campanulate calyx.

Surrey forms of *M. arvensis* are the type and the varieties *agrestis*, *praecox*, and *ovalifolia*. On the Middlesex side of the Thames the varieties *nummularia* and what I think will prove to be *parietariaefolia* occur. *M. arvensis* L., var. *praecox*, is sub-glabrous, with glabrous pedicels, and is more nearly identical with Sole's type from the banks of the Medway, Kent, than those from the Thames banks, Surrey or Middlesex, where the plants are more decidedly hairy. Female and hermaphrodite plants occur, and some have glabrous pedicels. I have a very narrow-leaved form of this from the banks of the Thames, Old Windsor, Berks, and it has glabrous pedicels. I regard these forms and *M. arvensis parietariaefolia* as derivatives of *M. verticillata*, or that crossed again with *M. arvensis*. *M. arvensis*, var. *Allionii* (Bor.) I have from the Medway above Tonbridge, and what seems the same from the Thames banks, Middlesex, opposite Kingston, with broader leaves. Both are sub-glabrous with glabrous pedicels, and very short calxy teeth.

M. Pulegium occurs in various parts of Surrey, and plants from Black Brook, Dorking, remained prostrate after eight years' cultivation. *M. Pulegium*, var. *erecta* Wirtgen, or what I considered to be this from Limpsfield Common, grew to a height of eighteen inches under cultivation. A plant from Stonebridge, Dorking, prostrate by the side of a pool, grew perfectly upright to a height of twelve inches when cultivated, with prostrate stolons.

EXCURSION TO JERSEY.

By Miss VACHELL.

The sixteen members of the Society who met together in Jersey from May 24th-29th under the expert leadership of Dr Druce will long remember the five busy happy days spent in visiting the numerous rare species for which the Island is famous under ideal conditions and amongst the most delightful scenery.

Physically, Jersey is a part of France, but botanically it is included in the British Isles. Several of the plants that occur on the Island are therefore of unique interest, for they are South European forms which do not extend as far north as Great Britain, and the keen field-botanist who would see all the British species growing under natural conditions must of necessity, sooner or later, visit the Channel Islands.

The first afternoon (Thursday) was spent in examining the many plants of interest that grow on West Mount and on the waste ground lying to the west of St Aubin's Bay. Hardly had the party left the grounds of the Grand Hotel before the first specimens of *Bromus rigens* were secured, to be quickly followed by others of *Silene anglica*, *S. quinquevulnera*, *Brassica Cheiranthos*, *Lepidium heterophyllum*, var. *canescens*, *Polycarpon tetraphyllum*, the pretty alien, *Gnaphalium undulatum*, and several of the small leguminous plants so abundant in the Island, including *Medicago arabica*. *Trifolium scabrum*, *T. glomeratum*, and *T. suffocatum*. *Romulea Columnae* was plentiful on grassy slopes, but unfortunately all the flowers were over. Following the course of the railway that skirts the bay, low hedges of *Atriplex Halimus* were specially noticeable and a few fine plants of *Lavatera arborea* and *Plantago lanceolata*, var. *Timbali*, were passed before Bel Royal, the well known station for *Allium sphaerocephalum*, was reached. Here many plants of interest were pointed out. *Statice plantaginea* was, as yet, only just in bud, but magnificent tufts of *Alyssum maritimum* and masses of the sweet scented evening primrose *Oenothera odorata* made a fine display of white and yellow.

The following morning an early start was made by charabanc for St Ouen's Bay, which is, botanically speaking, the most interesting part of the Island. Halting at the top of the steep hill leading to the Bay, members were able to see several spikes of *Orobanche purpurea*, parasitic upon yarrow, and *Valerianella carinata* growing abundantly by the side of the road. Here the differences between the flora of Jersey and that of the mainland were exceedingly apparent. *Geranium Robertianum*, var. *purpureum*, and *Vicia angustifolia*, var. *Garlandii*, an exceedingly pretty variety named by Dr Druce after Mr Lester-Garland, the author of the "Flora of Jersey," take the place of the more ordinary forms, while the rocks were covered with *Hedera Helix*, var. *sarniensis*, which is common all over the Island. A heavy shower swept over the bay as the sandhills were being searched for *Tunica prolifera*, *Silene conica*, *Centaurea aspera*, *Medicago minima*, *Senecio vulgaris*, var. *radiatus*, *Weingaertneria canescens*, *Mibora minima*, *Koeleria albescens*, the diminutive *Viola Kitaibeliana*, var. *nana*, *Lagurus ovatus* (only an introduced plant in Jersey), and the pretty rose-coloured form of *Rosa spinosissima*, but it only damped the clothes and not the ardour of the flower-hunters, who cheerfully lunched under the partial cover of the charabanc, and then under more favourable weather conditions continued their search for rarities round St Ouen's Pond. Here *Orchis laxiflora* was seen in excellent condition, and a specimen of the allied form, *O. elata*, was secured by one of the members. After *Orobanche Ritro*, var. *hypochaeroides* and *Diotis maritima* had been visited near the shingle, *Bupleurum aristatum* remained the only serious quest. A combined search was therefore made for it on sandy ground near the square fort which resulted in the discovery of a tiny piece about one inch high. A dozen people forming an admiring circle round such a diminutive plant with their heads almost on a level with the ground would have made an amusing snapshot had a camera been available! On the way back to St. Helier the well-known station for *Brassica incana* was passed, and a very well satisfied party returned to tea at the Grand Hotel. On Saturday Corbière was reached by train about 11.30 o'clock. The extreme grandeur of the granite cliffs, the intense blue of sea and sky, the distant lighthouse approached from the mainland at low tide by a cemented causeway, and the glorious white and yellow of ox-eye daisies and kidney vetch that clothed the grassy slopes, made a picture never to be forgotten. Flowers were everywhere. *Helianthemum guttatum* was dotted about the short springy turf. *Cytisus scoparius*, var. *prostratus*, braved the wind-swept ledges on the cliffs. *Ruscus aculeatus*, bright with scarlet berries, grew in sheltered positions, and *Asplenium lanceolatum* nestled between crevices in the rocks. *Carex punctata* alone remained unfound, so in order not to be disappointed of their prize a few enthusiasts led by Dr Druce pursued the troublesome sedge round inlet after inlet till, hungry and tired of their quest, they sought the luncheon basket at the station where it had been left. The food had, however, proved irresistible to the rest of the party, and basket and botanists had all disappeared, and were only eventually tracked by a tell-tale vasculum that had been left outside the hotel. *Echium plantagineum* and *Tillaea muscosa* were then visited near the mines, and following a road that skirted the coast the members wandered to La Moye station and caught the train home to St. Helier. Jersey trains are luckily in no hurry, and fine specimens of *Briza maxima* were secured by one of the party during the wait at one of the stations. On Sunday the motor charabanc was again requisitioned to take the party to the North of the Island. Halting at La Marais the members were enabled to see *Lythrum Hyssopifolia* growing in damp places by the road and an inviting-looking piece of boggy ground was searched for carices and marsh orchises. The next stop was at Grosnez Point. Here the colouring was superb. The massive cliffs surmounted by the ruined castle, the sea birds wheeling overhead, the rock-slopes carpeted with pink thrift, white ox-eye daisies and the lemon and orange coloured forms of *Anthyllis Vulneraria* and again the deep blue of the sky and sea. Magnificent specimens of *Hypochaeris maculata* were seen in this, its only station on the Island, and also many fine roots of *Hieracium Peleterianum*, both in excellent condition. After lunching at Plémont the party clambered down steep slopes to the shore, where in an almost inaccessible spot above a deep chasm *Limonium lychnidifolium* was pointed out by Mr Attenborough. Here, as elsewhere, the slopes of the cliffs were carpeted with flowers. Hundreds of spikes of *Orobanche amethystea*, parasitic on *Daucus*, appeared above the short turf, and *Frankenia laevis* was growing on rocks near the sea. After a fruitless search at Crabbé

Bay for wild medlar, said to be more native here than at Rozel, where it is abundant in the hedges, the party drove through the waterworks valley to St. Helier, passing *Orobanche Rapum-genistae* and *Allium triquetrum* by the side of the road.

On Monday another long day was spent in St. Ouen's Bay. Specimens of *Scirpus americanus*, which had before eluded the searchers owing to its extremely immature condition, were safely secured, and *Dianthus gallicus* was visited in its only station. Two of the flower features of the Bay were undoubtedly the bright yellow of *Raphanus maritimus*, abundant on the sand hills, and a large expanse of sandy ground near the shore literally carpeted with the pretty purple flowers of *Matthiola sinuata*. After a picnic lunch at La Pulente, *Trifolium strictum* was seen in abundance on high ground and the drive was continued over the Quenvais, past St. Brelade's Bay to Portelet Bay, where a delicious tea was provided outside a large farmhouse. The station for *Trifolium Molinerii* on Janvrin's tomb being inaccessible owing to the state of the tide, the members were tempted to wander to a point overlooking the bay, where amid tiny plants, *Mibora minima* and other treasures, a restful half hour was spent enjoying the rich colouring of the heather clad slopes, the sombre shades of the cliffs near Noirmont Point and the distant view of Janvrin's Tower on the tiny island, with its pathetic history. *Ranunculus flabellatus* and the Jersey fern, *Gymnogramme leptophylla*, still remained unseen, and to the delight of the members both were pointed out before this. the last expedition. came to an end.

The following day the party began to disperse. A few stayed on for a short while loth to leave a place of such exceptional interest. Expeditions to Mont Orgueil, Grouville, St. Catherine's Harbour, Rozel, etc. resulted in the acquisition of *Juncus capitatus*, *Spergularia atheniensis*, *Poa bulbosa*, *Phalaris minor*, *Cynosurus echinatus* *Arum italicum*, *Thesium humifusum*, *Tragopogon porrifolius*, *Matthiola incana* (naturalised at Fort Regent), *Hypericum linariifolium*, *Ophrys sphegodes* and *Orchis militaris*, a new record for the Island.

Seldom does a week's hard flower-hunting come to an end amid such universal feelings of regret, and those who were privileged to join the expedition realised to the full the expert knowledge and astonishing memory of our leader and the wonderful patience with which he answered question after question. As nothing happened to mar the pleasure of the party or the success of the expedition it is hoped that before long the members of the Society will be given another chance of carrying on combined work in the field.

SOME SCOTTISH RARITIES VISITED, 1923.

By W. D. Miller.

The following notes are of slight interest to the critical botanist, but they record a visit to Scotland memorable for the large number of rare plants observed *in situ*.

The last half of July and the first few days of August were spent at various centres, and generally it would be impossible to choose a better date. *Saxifraga oppositifolia*, *Trollius europaeus*, *Rubus Chamaemorus*, *Loiseleuria procumbens* and a few other plants were practically over flowering, and some of the lowland Carices were in advanced seed. On the other hand *Lactuca alpina*, *Saussurea alpina* and a few others were hardly opening, but the great mass of plants were in their full glory.

Aided by several motors, unbounded enthusiasm and experienced guidance the party visited Barry sandhills, Glen Clova, Ben-y-Vrackie, Dalnaspidal, Loch Tummel, Glen Lyon, Ben Lawers and the adjoining hills, Ben Nevis, the Cuchullin Hills and the Firth of Forth at Longniddry.

The opening meet was at Forfar, where a short evening walk beside the Loch produced *Cicuta virosa*, *Viola lutea*, var. *amoena* (far the commonest form in the parts of Scotland with which the writer is acquainted), *Trifolium agrarium*, *Lolium temulentum* (on the wall of a house) and *Festuca pseudololiacea*. Next day, in heavy rain, the party drove to Carnoustie, and as there was no firing at the ranges, walked over the sandhills in the direction of the lighthouse. Among a host of flowers were noticed *Thalictrum minus*, var. *dunense*, *Astragalus danicus*, *Juncus balticus*, *Corallorrhiza innata* *Parnassia palustris*, *Salix pentandra*, and a very pale form of

Koeleria cristata (unidentified, and in the present state of the classification of *Koeleria*, unnameable). The weather cleared at midday and, driving back, a local enthusiast, aged 12 years, shewed the party a narrow strip of wood beside the road carpeted for 50 yards or more with mingled *Pyrola minor* and *Goodyera repens*.

The next two days were given to Glen Dole and its subsidiary corries. (Incidentally *Meum athamanticum* is abundant in Glen Clova, but was not noticed elsewhere.) The extraordinary flora of Glen Dole is well known. The following is a mere list of the less common plants seen on this occasion :—*Oxytropis campestris*, *Listera cordata*, *Lacuta alpina*, *Linnaea borealis*, *Erigeron alpinus*, *Veronica fruticans*, *V. alpina*, *Carex alpina*, *C. atrata*, *C. capillaris*, *C. rariflora*, *Pyrola media*, *Salix reticulata*, *Alopecurus alpinus*, *Phleum alpinum* and *Woodsia hyperborea*. *Habenaria viridis* was seen growing with *Carex alpina* and *Juncus trifidus* on almost bare disintegrated rocks at 3000 ft. The rocks, screes and bogs were, of course, covered in profusion with less distinguished but often more beautiful plants.

The same evening Pitlochry was reached, and the following day a visit was paid to Loch Tummel to see *Schoenus ferrugineus* in its only known British station. *Drosera anglica* is abundant and very fine along this beach. In the afternoon a climb on Ben-y-Vrackie was rewarded with *Oxytropis uralensis*, *Astragalus alpinus* and *Carex rupestris*. The following day a journey was made by road to Dalnaspidal to see *Menziesia caerulea*. The plant is very scarce and appears to be getting scarcer. It is to be hoped that collectors will be more than ever considerate. On the Sow of Atholl *Lycopodium annotinum* is the commonest form of club moss. Along the crest *Loiseleuria procumbens* carpets the ground over a large area. A dozen sedges may be gathered in the bog below, among them *Carex limosa*.

Passing on at once to various quarters on the north shore of Loch Tay, expeditions were taken thence to the top of Ben Lawers and Ben Tarmachan, to Killin and Glen Lyon. The Lawers Saxifrages were all met with, and among other rare species seen were *Gentiana nivalis* (in considerable quantity though very local), *Arenaria sedoides*, *Myosotis alpestris*, *Carex atrofusca* and the new sedge *C. microglochin*, *Juncus bigumis*, *J. castaneus*, *Pyrola secunda*, *Polygonatum verticillatum*, *Kobresia caricina*, *Hymenophyllum unilaterale* and a number of other species almost equally uncommon. The commoner forms of *Orchis* in the pastures beside Lawers Hotel were in amazing profusion, the *conopsea* hybrids being of considerable interest. A long time was spent in a howling gale on the north side of King's Seat, Tarmachan, gathering Poas of the alpine type, as *P. laxa* is reported from that locality. However the descriptions and nomenclature of this group are discouraging to a degree and no conclusion was reached as to the identity of the plants obtained.

On the way to Fort William a stop was made to visit the classic station for *Scheuchzeria palustris*. A fair quantity was seen growing with *Carex limosa*, *C. filiformis*, *Oxycoccus quadripetala*, etc. As the plant—in wet years at least—is exceedingly unapproachable and as it is now reported from more than one bog in the vicinity, its threatened extinction may be indefinitely postponed.

Ben Nevis itself is somewhat disappointing botanically, but it provided *Cerastium trigynum* and *Luzula arcuata*, the latter very sparse, and a hard day out of Glen Spean, thanks to the help of the owner, produced *Saxifraga caespitosa*. Other plants noted were *Pinguicula lusitanica*, *Carum verticillatum* and *C. Carvi*, looking thoroughly native.

Thence a strenuous visit was paid to the Cuchullin Hills in Skye, where the party were rewarded by *Arabis alpina*, *A. petraea*, *Eriocaulon septangulare* and *Deschampsia setacea*.

Scirpis rufus and *Senecio viscosus* were the most distinguished plants seen beside the Forth.

It should be stated that only three of the party were collectors and, as they used the utmost discretion, little if any damage was done to the rare plants visited. It is impossible in so short a note to touch on the great mass of plants observed, several hundred in number, or to mention the scenic effects constantly offered and the noble setting which displays to such advantage the rare alpines met with. While of course no pretence is made that such an excursion is of serious botanical importance, the labours of the study and the herbarium cannot but be invigorated by so lively an interlude, and the addition of a new species to the British Flora may be regarded as some justification for the expedition.

NORFOLK PLANTS.

By Bernard Reynolds.

The list records mostly additions to Nicholson's *Flora of Norfolk*, 1914, and a few new stations for the rarer plants.

Thalictrum minus, var. *dunense*, is still at Caistor, but in very small quantity. A freak form of *Geranium pusillum* was noticed there with abnormal flowers, the calyx being greatly enlarged, and the petals abortive. *Geranium rotundifolium*, reported from one station only in the west of the county, I found at West Caistor in amazing abundance, one lane for 50 yards on both sides being practically monopolised by this plant. *Trifolium repens*, var. *rubescens*, was gathered by a friend last year, but though I was taken to the spot no trace could be seen of it this year. *Bupleurum tenuissimum* I got on the east bank of the Bure, one, and also three miles above Yarmouth. The Yarmouth plant was semi-prostrate, measuring 14 inches in length, with many branches and leaves 3 inches long. It was a quite abnormal specimen. A monstrous form of *Cicuta virosa* was noticed at Ormesby with duplicate umbels, the secondary umbels arising from the base of flowerless involucral bracts. It was a large plant showing the same characters throughout. Also a freak of *Pedicularis palustris* was noticed near Runham with a prostrate, duplicated, flattened stem over 6 inches across at base and over 6 feet in length. *Carex diandra*, var. *Ehrhartiana* (Hoppe) was in plenty at Runham, but I did not see the type plant anywhere during my stay. *Carex Oederi*, var. *elatior*, was frequent, and one plant had female flowers at the top of the male spike, a curiosity I had not seen previously in the Heterostachyae group. *Ammophila baltica* was very abundant at Caistor, and also close to Yarmouth and at Winterton. The bright orange anthers mark it definitely from *arenaria* when they are visible. A branched or lobate form of *Ammophila arenaria* was noticed at Yarmouth, and this has been sent to Dr Druce, who will, I except, report on it later [See *Rep. B.E.C.* 634, 1922, where I have named it var. or forma *ramosa*. G. C. D.]. The marsh form of *Habenaria conopsea* was frequent at Fleggburgh and, as it is facially so different from the plant of the chalk hills, I wonder they have not been separated. *Glyceria pro-*

cumbens, which has not been recorded recently for the Yarmouth district, I saw close to the town, but it was growing in the crevices of paving stones, and seemed in danger of extermination. I searched in vain for *Carex trinervis*, but only found *C. gracilis* with the deeply three-nerved fruit and erect spikes that I think has been called (possibly in error) var. *tricostata* of Fries. The fruits were curiously light green with rather short glumes, so perhaps the plant should come under var. *viridis* of Hartman [Yes, G. C. D.]. My specimens do not compare well with the robust *tricostata* of the continent. *Potamogeton mucronatus*, reported from Yarmouth and Stalham in the *Flora*, was very abundant, and a most unusual form of *P. crispus* was noticed at Stalham with stiff branches and spathulate leaves. Mr A. Bennett has kindly informed me that a similar plant may be seen in the Linnean Herbarium.

THE VEGETATION OF THE CULBIN SANDS.

By E. J. A. Stewart, M.A., B.Sc., and
Donald Patton, M.A., B.Sc., Ph.D.

From time to time there appears in the daily or weekly periodicals an article on the Culbin Sands. Therein attention is usually directed to their history, or it may be, their mythology. Investigation, however, first in 1913, and again in 1923, has shown the authors that the Culbins are as interesting vegetationally as they are historically.

From the left bank and the mouth of the River Findhorn the Culbin Sands extend westward along the shores of the Moray Firth for more than six miles. They thus lie in the Watsonian vice-county 96. Bain, writing in " The River Findhorn," describes how in 1694 the Culbin Estate—" the Garden and Granary of Moray "—was overwhelmed by great accumulations of sand inblown before fierce westerly hurricanes. In the following year the proprietor of the devastated area appealed successfully to the Scots Parliament for the remission of certain taxes. The catastrophe was the cause of the passing of an Act prohibiting under severe penalties "the pulling or cutting of bent, juniper, or broom at Culbin, or elsewhere along any sandy sea-shore round the country."

The sands are the haunt of the antiquary, who is occasionally rewarded by finding not only relics of the days when the Stuarts ruled, but also bronze ornaments, beads and fragments of pottery of much earlier periods. He is patiently waiting until one of the high white dunes passes eastward and lays bare the ruins of the ancient mansion-house and the apple tree which, it is said, reappeared once, bore leaves and produced flowers and fruit! As these massive accumulations of sand slowly progress, wind-driven before the storms, the furrows of former fields are exposed and the scattered fragments of rusted iron objects proclaim an industrious past. Indeed, one area is known locally as "The Smiddy" (smithy). In the museums of Nairn, Forres, and Edinburgh (The Antiquarian Museum) there are many relics of the Stone Age, which were collected among the sands.

The area covered by the dunes was not all above sea level prior to the great devastation. A dotted line on one map shows the limit of the land at one time. This shore line is at a considerable distance from the present sea margin. The dunes of Culbin and other dunes westward along the same coast rest upon the 25-feet raised beach which stretches between the Findhorn and Fort George. The recently published "Memoir of the Geological Survey, Scotland," on the district remarks :—"Fragments of beaches at higher levels are to be found along the inland limit of this terrace"—the lowest from 15 ft. to 30 ft. in height—"thus suggesting that the latter may have been formed in part from the destruction of older sea-margins." Amid the shifting Culbin dunes one may see extensive storm beaches of a past age, as well as possible indications, in other gravel expanses, of former channels of the Findhorn which at one time flowed westward into the sea through the present dune area.

On the shifting dunes, when the weather is dry, the sand seems ever in motion, and the gradual alteration in the configuration is no doubt greatly aided by the climatic conditions. The rainfall here is about 20 ins. annually. The topography of the surrounding district—a lowland coastal belt backed on the south and west by the mass of the Highlands and the prevailing winds, westerly and south-westerly—account for the low rainfall. Sir Robert Gordon of Straloch, in the seventeenth century, writing of Moray, says :—" In salubrity of climate Moray is not inferior to any, and in richness and fertility of soil it much exceeds any of our Northern provinces. The air is so temperate that when all around is bound up with the rigour of winter there are neither lasting snows nor such frosts as damage fruit trees." A recent report gives the average maximum temperature as 53 degs., and the minimum 39 degs. Were the rainfall heavier the vegetation might succeed more surely in fixing the sand, but, while the adjoining cultivated lands maintain their long reputation for fertility, among the dunes the growth of plants is severely handicapped. Although the wind be high a very slight precipitation damps the sand and prevents it from shifting. On the other hand, on a clear windy day, the Culbin Sands, viewed from the mountains away to the south, present a remarkable spectacle. The sand appears to rise in dense clouds to a great height, driving eastwards towards Findhorn Bay, east of which again the country stands out clear. The dunes themselves tend to move eastward. Mr Bain records that certain of those on the western border of the area had travelled " nearly a mile during a generation." There is, indeed, a continuous cycle of movement. Sand is blown into Findhorn River and Bay and, with other material brought down by the river, is carried out to sea. The sea, aided by currents, gives sand up again in increased quantity on the coast to westward whence it is again blown inland.

The exceptional flooding of the summer of 1923 gave opportunity to appreciate something of the effect of previous yet greater floods, and in particular the amount of solid matter which can be brought down by the rivers flowing northwards into the Moray Firth. The waters of the Findhorn had so much in suspension that thousands of salmon were choked during one rapid rise of the river. The material thus conveyed has two main sources :—first, the boulder clay corroded and eroded by the river ; second, the detritus formed by the weathering of the rocks *in situ* within the river basin. The centre of distribution of ice during the Ice Age was in the neighbourhood of Ben Attow to the west, where the geological formation is gneissic, similar to that in the Findhorn basin (in which also occur granite outcrops). Accordingly, by the theory above mentioned of the mode of deposition of the Culbin Sands, the material of which they are composed may be traced to these sources. This is in agreement with the microscopic researches of Dr Mackie of Elgin ("The Sands and Sandstones of Eastern Moray"). As may be imagined from the large area of the sands, the constituent minerals and their proportions vary locally; generally, quartz and felspar preponderate.

In the central area of the Culbin Sands occur the shifting or white dunes which sometimes attain an altitude of 120 feet. Interspersed among these are the more fixed, grey dunes, generally of lower elevation, bearing a vegetation dominantly *Ammophila arenaria* Link. Scattered among all these dunes are also relatively flat expanses. Some of these have surfaces of continuous shingle, others of sand, and there are intermediate stages. On the outer parts of the Culbin area are more or less fixed dunes. Lying between the more central and the border dunes are several large level tracts which vary from "lochs" to dry basins according to the seasonal rainfall. Immediately to the south of the Culbins the land is agricultural and, as indicated, still merits the name, "The Granary of Moray." To the east is the estuary of the Findhorn, and to the north and north-west the shore of the Moray Firth. Woods, mainly Pine and Birch, have been planted extensively on the margins of the Culbins. At present the sands themselves are being planted by the Forestry Commission.

Vegetationally, the area under consideration may be classified thus:—

A. Littoral Areas.
    1. Strand.
    2. Salt Marshes.

B. Sandhills Proper.
    1. Shifting Dunes.
    2. Fixed Dunes.
    3. Dune Hollows.
        a. Shingles.
        b. Marshes.
        c. Grasslands.
        d. Wooded Areas.

A. Littoral Areas.

1. Strand.

This area stretches for about two miles west of the mouth of the Findhorn. It is only a very narrow belt, and is delimited on the landward side by an almost continuous line of low dunes. In fact, at places the high tide reaches the dunes. The vegetation is very sparse on account of the conjoint action of wind and tides. Occasional plants, such as *Cakile maritima* Scop. and *Erodium cicutarium* L'Herit., occur, with invading *Ammophila arenaria* Link from the dunes.

2. Salt Marshes.

These are found in two localities. One is on the north-western seaboard of the Culbin Sands, the other occupies a portion of the western shore of the Findhorn estuary.

i. The North-West Salt Marsh.

This extends south-eastwards in the direction of the fresh-water dune marshes, discussed below, with a corresponding gradual transition in the character of the vegetation. Uprising from the marsh are frequent knolls of various altitudes bearing plants of a heath association, as *Empetrum nigrum* L., *Gentiana campestris* L., *Gnaphalium sylvaticum* L., *Lycopodium Selago* L., and *L. clavatum* L.

The vegetation of the salt-marsh proper is very varied, the following plants being locally dominant :—*Glyceria maritima* Mert. & Koch, *Glaux maritima* L., *Statice maritima* Mill., *Triglochin maritimum* L., and *Atriplex glabriuscula* Edm.

The inblown sand from seaward, the outflow of fresh water from the dune marshes, and occasional inundations of the sea prevent the establishment of a salt marsh association within any definite area. These factors account for the growth here of such plants as :—*Ranunculus sceleratus* L., *Cakile maritima* Scop., *Raphanus Raphanistrum* L., *Spergularia rubra* Pers., *Montia fontana* L., *Arenaria peploides* L., *Matricaria inodora* L., *Suaeda maritima* Dum., *Salsola Kali* L., *Festuca rubra* L., *Scirpus Tabernaemontani* Gmel., *Eleocharis palustris* R. & S., *Juncus bufonius* L. *Senecio sylvaticus*

L., abundant inland on the wooded areas of the Culbins, and *Sonchus arvensis* L. also occur here as casuals.

ii. The Findhorn Salt Marsh.

The flora here is more established. The high tides cover the vegetation regularly for some distance from the muddy channel proper, and frequently make more extensive inroads upon the low flats which lie between the dunes and the estuary. These flats are much cut up by narrow, sinuous, often inter-connected channels, and small runnels traverse the area from the neighbourhood of the dunes. The salt marsh proper is a relatively narrow belt. The dominant plants are:—*Statice maritima* agg. (especially), *Plantago maritima* L., *P. Coronopus* L., *Littorella uniflora* Asch., *Glaux maritima* L., *Cochlearia officinalis* L., *Triglochin maritimum* L., *Aster Tripolium* L., *Juncus squarrosus* L., and *Carex Goodenowii* Gay.

Casuals found in this area are:—*Fumaria capreolata* L., *Brassica oleracea* L., *Trifolium dubium* Sibth., *Leontodon autumnale* L., and *Anchusa sempervirens* L. These may have been brought down by the river.

B. Sandhills Proper.

1. Shifting Dunes.

The highest dunes, the most exposed to the winds, do not afford an opportunity for plant growth. The sand is in continual motion and the configuration is always varying. At present an attempt is being made by the Forestry Commissioners to fix thsee dunes by the planting of *Ammophila arenaria* and *Pinus*. Sufficient time has not elapsed to allow any observation of the effect of this latest artificial introduction of vegetation. *Ammophila* however, also occurs naturally as the dominant and even the sole successful—usually temporarily successful—coloniser of the shifting dunes. It is found chiefly on the windward and lateral (north and south) lower slopes and bases of the dunes. All stages of *Ammophila* colonisation are presented, between absolute barrenness and a dense growth of the plant. In the latter case the Marram Grass is occasionally accompanied by other vegetation. On the windward side the older dunes are undergoing denudation; the Marram is being undermined, blow-outs occur, but continued corrosion may be impeded or even prevented by accumulated plant remains. These may even aid in rebuilding a dune. Any other plants found where *Ammophila* is more abundant are usually of the current year, the seeds having been inblown or carried by birds. Such are:—*Viola Riviniana* Reichb., *V. canina* L., *Veronica officinalis* L., *V. Chamaedrys* L., *Cirsium arvense* Scop., *Senecio Jacobaea* L., and *Filago minima* Pers. Except the last-named, these we occasionally found as perennials, but of no great age.

2. Fixed Dunes.

The slopes of these dunes facing the prevailing winds are usually undergoing denudation and accordingly are mostly barren except for persisting and re-established plants of *Ammophila arenaria*. To leeward of the crest the Marram is gradually replaced by other species. In order of downward succession the typical plants are:—**Ammophila arenaria* Link. *Elymus arenarius* L., *Senecio Jacobaea* L., **Cirsium arvense* Scop., *Filago minima* Pers., *Teesdalea nudicaulis* Br., *Viola canina* L., *Erophila verna* E. Meyer, *Galium verum* L., **Carex arenaria* L., **Juncus squarrosus* L., **Calluna vulgaris* Hull, **Salix repens* L., *Taraxacum officinale* Weber, *Lotus corniculatus* L., *Rumex Acetosella* L., *Hypochœris radicata* L., *Leontodon autumnale* L. These plants finally give way to the Dune Grassland (described below).

The plants marked * play a great part in the fixation of the sand.

3. Dune Hollows.

Among the dunes, as already indicated, occur extensive areas of shingle, the relics of former sea beaches and river channels, and occasional tracts of a former arable land, the furrows laid bare, still persisting. There are also well defined basins, the dune marshes, which in places merge into the drier and more stabilised dune grasslands. Here and there, chiefly near the margins, east, west, and south of the Culbin Sands, are woods of Pine and Birch, some no doubt, planted, others self-sown. In all these relatively flat areas occur diminutive dunes or mounds of both shifting and fixed sand whereon, again, *Ammophila arenaria* is dominant, if there be vegetation at all.

a. Shingles.

These are practically barren except for *Rumex Acetosella*, L., *Cerastium semidecandrum* L. and occasional tufts of *Ammophila arenaria* Link.

b. Marshes.

Ecologically these afford exceptional scope for study. Four areas in particular were carefully investigated, lying respectively towards the north, north-west, south and east borders of the Culbins. In the winter and spring months these are fresh-water lochs, during summer they are more or less dry. The vegetation varies accordingly.

North or Buckie Loch shows the largest continuous area of standing water and also contains the greatest number of species of plants. Commencing from the deepest water and working towards the surrounding dunes, one may observe the following sequence typical associations of plants being arranged in order of wetness of habitat :—

(i.) *Phragmites communis* Trin., *Equisetum limosum* L., *Typha latifolia* L., *Potamogeton polygonifolius* Pourr., *Apium inundatum* Reichb. fil., *Ranunculus Lingua* L., *Menyanthes trifoliata* L., *Potentilla palustris* Scop. and *Lycopus europæus* L.

(ii.) *Caltha palustris* L., *Eleocharis palustris*, R. & S., *Eriophorum angustifolium* Roth, *E. vaginatum* L., *Stellaria uliginosa* Murr. *Radicula Nasturtium aq.* Druce, *Myosotis caespitosa* Schultz, *Pedicularis palustris* L., *Epilobium palustre* L. and *Carex inflata* Huds.

(iii.) *Peplis Portula* L., *Hydrocotyle vulgaris* L., *Juncus articulatus* L., *J. bulbosus* L., *Carex Oederi* Retz., *Galium palustre*, var. *Witheringii* Sm., *Ranunculus Flammula* L., *Juncus conglomeratus* L. and *Narthecium ossifragum* Huds.

(iv.) *Littorella uniflora* Asch., *Radiola linoides* Roth, *Lychnis Floscuculi* L., *Lycopodium inundatum* L., *Orchis mascula*, L., *O. latifolia* L., *Sagina nodosa* Fenzl, *Juncus squarrosus*, L., *Erica Tetralix* L., *Carex echinata* Murr., *Cirsium palustre* Scop., *Listera ovata* Br. and *Sagina procumbens* L.

(v.) *Salix aurita* L., *Calluna vulgaris* Hull, *Drosera rotundifolia* L., *Prunella vulgaris* L., *Corallorrhiza trifida* Châtel. *Dryop-*

teris montana OK., *Betula tomentosa* Reith. & Abel, *Goodyera repens* Br., *Salix repens* L., and *Listera cordata* Br.

These plants are not limited to the associations described. The above are the usual successions, but variations occur at different points, especially in relation to the water-content of the soil. On the south, where the drifting sand is encroaching upon the Buckie Loch area, marsh plants continue to grow up through the covering of sand. For example, *Iris Pseudacorus* L. appears to be flourishing on the otherwise barren sand in places as far as ten yards from the margin of the sand. The Moss flora plays a very significant part in the vegetation of the area.

North-West Loch contains several basins in which water appears to persist through all seasons. The flora resembles that of Buckie Loch, but a larger area is here occupied by *Betula tomentosa* Reith. *Juniperus communis* L. occurs in isolated patches. This plant we did not find in any other part of the Culbins although it is abundant in the pine woods of the district. The feature of this marsh is the way in which low fixed dunes densely clothed with vegetation are distributed among the wetter areas. This vegetation consists in some places of *Ammophila arenaria* and its associates and, in others, *Empetrum nigrum* is dominant, accompanied by *Lycopodium clavatum* L., *Achillea Ptarmica* L., *Campanula rotundifolia* L. and *Polypodium vulgare* L.

East and South Lochs show striking comparisons and contrasts with the others. In 1923 the vegetation of the former in its dominant species resembled that of the latter as the authors found it in 1913. Ten years had made a remarkable change in South Loch, and this was due to the fact that inblown sand had made the area much drier. In 1923, although the bed of East Loch was damp, there was no surface water. The zonation of the vegetation here is interesting, forming concentric belts. In the central and wetter parts the dominant plant is (1923) *Peplis Portula* L., appearing a purple patch from a distance. Among the Purslane occur tufts of *Carex Oederi* Retz. Around this area is a belt characterised by *Littorella uniflora* Asch., broader on the west, and with it are associated *Carex Goodenowii* Gay, *Sagina procumbens* L., *Sagina maritima* Presl, and *Carex inflata* Huds. In the next concentric belt *Ranunculus Flammula* L. and *Hydrocotyle vulgaris* L. are dominant, with

Juncus bulbosus L., *J. articulatus* L., *Myosotis caespitosa* Schultz. and *Elocharis palustris* R. & S. Outside this zone *Radiola linoides* Roth, is abundant, and has, as accompanying plants, *Gnaphalium sylvaticum* L., *Juncus conglomeratus* L., and *Potentilla Anserina* L. The zones of this portion of the basin may be distinguished at a distance by their respective colours. From the centre these are:—purple, green, yellow, and green.

The south-west part of the basin is characterised by a ground vegetation of mosses and by low Birches. Here occur in abundance *Lycopodium inundatum* L., *Lycopus europæus* L., *Eriophorum angustifolium* Roth, *E. vaginatum*, L. *Prunella vulgaris* L., *Pyrola minor* L., *Drosera rotundifolia* L., *Viola* spp., *Erica Tetralix* L., *Juncus squarrosus* L., and *Corallorrhiza trifida* Chât. Here are interspersed dry sandy mounds on which *Calluna vulgaris*, var. *pubescens* Hull, is dominant, accompanied by *Trifolium repens* L. and others.

By the persistent blowing in of sand from the dunes on the west separate colonies are being formed in this Birch community as well as in the more open marsh to the north of *Salix repens* and also of *Carex arenaria* L., associated with *Senecio Jacobaea* L., *Cerastium vulgatum* L., *Holcus lanatus* L., *Rumex Acetosella* L., and *Filago minima* Pers.

The considerable area of South Loch, which in 1913 was purple with *Peplis Portula* L., is now (1923) green with *Littorella uniflora* Asch., sand having blown in and made the area drier. Around the pure mat of *Littorella* are slightly elevated little mounds bearing a different and rarer vegetation, namely *Agrostis alba* L., *Aira praecox* L., *Deschampsia flexuosa* Trin., *Sagina procumbens* L., *S. apetala* Ard., *S. subulata* Presl, *Rumex Acetosella* L., *Bellis perennis* L. *Senecio Jacobaea* L., *Poa annua* L., *Alopecurus geniculatus* L., *Galium palustre*, var. *Witheringii* (Sm.), and *Holcus lanatus* L.. Ramifying from these tufts by means of stolons are plants of:—*Poa annua* L., *Rumex Acetosella* L., *Ranunculus repens* L., and *Eleocharis palustris* Br. This last simulates in its habit *Carex arenaria* L., of the sandy levels, and also presents a unique feature in the behaviour of its growing point. An arch, bearing numerous shoots is raised above the sand.

Around the *Littorella* area occurs a zone of *Cerastium semide-*

candrum L. To the west of these is a wetter tract, as in East Loch, except that *Salix aurita* L. is here more abundant.

An interesting find was obtained in July 1923 in a small basin bordering a wood on the east of the sands, namely *Hottonia palustris* L., in flower and fruit, a new record for Scotland. With it were growing :—*Typha latifolia* L., *Potamogeton polygonifolius* Pourr., *Glyceria fluitans* Br., *Lemna minor* L., *Littorella lacustris* Asch., *Alisma Plantago-aquatica* L., and *Juncus subnodulosus* Schrank.

c. Dune Grasslands.

These grasslands are found towards the northern and the southern limits of the Culbin Sands.

The Northern Area flanks Buckie Loch and extends on the east for about 500 yards, while on the west it merges into the Salt Marshes already described. The portion towards the east is well established. Here the most notable grasses are :—*Holcus mollis* L., *H. lanatus* L., *Festuca rubra* L., *F. ovina* L., *Agrostis tenuis* Sibth., *A. canina* L., *Deschampsia flexuosa* Trin. and *Nardus stricta* L. With these are *Luzula multiflora* DC., *L. campestris* DC. and also *Thymus Serpyllum* L. and *Lotus corniculatus* L., locally abundant. The following species are also frequent :—*Gentiana campestris* L., *Plantago lanceolata* L., *Polygala vulgaris* L., *Myosotis versicolor* Sm., *Veronica officinalis* L., and *Trifolum repens* L., to mention a few.

The fishermen's track along the southern shore of Buckie Loch connects the east and the west grasslands by a similar flora. The grassland towards the west passes soon into marsh, and heath associates also occur in the vicinity—*Calluna vulgaris* Hull, *Lycopodium clavatum* L., and others.

The Southern Area extends between South Loch and the Findhorn Bay marshes. Here the vegetation is close and the grassland is interrupted by Birch and Elder. It resembles the Northern Grassland.

d. Wooded Areas.

These have been planted at various times and consist of Pine or Birch or a mixture of both. Where they occur, which is chiefly towards the landward side of the Culbins, they are undergoing all stages of denudation. Self-planted Birches occur also here and there throughout the dune hollows. At present, too, Pines are being planted both on the shifting dunes and in the dune hollows by the Forestry Commissioners.

The ground vegetation of the first mentioned areas is that generally characteristic of the Pine woods of the district, *Goodyera repens* Br. being abundant, together with *Pyrola minor* L. and other Ericaceous plants. Where the sand has encroached upon the wood, typical pioneers of fixation are found, such as *Salix repens* L., *Carex arenaria* L., and *Rumex Acetosella* L.

The woodlands, as already indicated, may in future occupy a larger area of the Culbin Sands. So far man has only in a relatively slight degree interfered with the natural variations of the vegetation, for the past has been largely a record of his failures in the attempt to fix the sands. Once more and under auspices which give promise of more sustained effort, he is trying to restore this waste to its former usefulness. If he succeed in overcoming the conditions which have produced and maintained the mostly barren dunes and the local floras, rich by contrast, of the dune-hollows, then the Culbin Sands will have lost much of their attraction ecologically.

LIST OF PLANTS FOUND ON THE CULBIN SANDS.

Ranunculus sceleratus L.
R. Flammula L.
R. Flammula L., var. *tenuifolius* Wallr.
R. Lingua L.
R. repens L.
Caltha palustris L.

Papaver dubium L.

Fumaria capreolata L.

Radicula Nasturtium Druce.
Cardamine pratensis L.
C. hirsuta L.
Erophila verna E. Meyer.
Cochlearia officinalis L.
Sisymbrium Sophia L.
Brassica oleracea L.
B. arvensis Scheele.
Capsella Bursa-pastoris Medic.
Thlaspi arvense L.
Teesdalea nudicaulis Br.
Cakile maritima Scop.
Raphanus Raphanistrum L.

Viola palustris L.
V. Riviniana Reichb.
V. canina L.
V. tricolor L.
V. arvensis Murr.

Polygala vulgaris L.

Lychnis alba Mill.
L. dioica L.
L. Flos-cuculi L.
Cerastium tetrandrum Curt.
C. semidecandrum L.
C. viscosum L.

C. vulgatum L.
Stellaria media Vill.
S. uliginosa Murr.
Arenaria peploides L.
Sagina maritima Don.
S. apetala Ard.
S. procumbens L.
S. subulata Presl.
S. nodosa Fenzl.
Spergula arvensis L.
Spergularia rubra Pers.
S. salina, var. *media* Presl.

Montia fontana L.

Radiola linoides Roth.
Linum catharticum L.

Erodium cicutarium L'Herit.

Ulex europaeus L.
Cytisus scoparius Link.
Trifolium pratense L.
T. medium L.
T. repens L.
T. dubium Sibth.
Lotus corniculatus L.
L. uliginosus Schkuhr.
Vicia Cracca L.
V. angustifolia Reichb.

Spiraea Ulmaria L.
Potentilla erecta Hampe.
P. Anserina L.
P. palustris Scop.
Alchemilla arvensis Scop.
A. vulgaris L.
Rosa canina L.
Pyrus Aucuparia Ehrh.

Drosera rotundifolia L.

Hippuris vulgaris L.
Myriophyllum spicatum L.
Callitriche palustris L.

Peplis Portula L.

Epilobium parviflorum Schreb.
E. montanum L.
E. palustre L.

Hydrocotyle vulgaris L.
Apium inundatum Reichb. fil.
Anthriscus sylvestris Hoffm.
Angelica sylvestris L.

Sambucus nigra L.

Galium verum L.
G. saxatile L.
G. palustre L., var. *Witheringii* (Sm.).

Valeriana officinalis L.
V. sambucifolia Mikan.

Scabiosa Succisa L.

Bellis perennis L.
Aster Tripolium L.
Filago minima Pers.
Antennaria dioica Gaertn.
Gnaphalium sylvaticum L.
Achillea Millefolium L.
A. Ptarmica L.
Chrysanthemum segetum L.
C. Leucanthemum L.
Matricaria inodora L.
Senecio vulgaris L.
S. sylvaticus L.
S. Jacobaea L.
S. aquaticus Hill.
Carduus crispus L.
Cirsium lanceolatum Scop.
C. palustre Scop.
C. arvense Scop.
Crepis capillaris Wallr.
Hieracium Pilosella L.
H. corymbosum Fr.
Hypochoeris radicata L.
Leontodon autumnale L.
Taraxacum officinale Weber.
T. palustre DC.
Sonchus asper Hill.

S. arvensis L.

Campanula rotundifolia L.

Vaccinium Vitis-Idaea L.

Calluna vulgaris Hull and var. *pubescens* Hull.
Erica Tetralix L.
E. cinerea L.
Pyrola minor L.

Statice maritima Mill.

Hottonia palustris L.
Trientalis europaea L.
Glaux maritima L.

Centaurium umbellatum Gilib.
C. vulgare Rafn.
Gentiana campestris L.
Menyanthes trifoliata L.

Lycopsis arvensis L.
Myosotis caespitosa Schultz.
M. palustris Hill.
M. versicolor Sm.

Solanum Dulcamara L.

Mimulus guttatus DC.
Veronica arvensis L.
V. serpyllifolia L.
V. officinalis L.
V. Chamaedrys L.
V. montana L.
V. scutellata L.
V. Beccabunga L.
Euphrasia officinalis L.
Pedicularis palustris L.
P. sylvatica L.
Rhinanthus Crista-galli L.

Pinguicula vulgaris L.

Lycopus europaeus L.

Thymus Serpyllum L.
Prunella vulgaris L.
Teucrium Scorodonia L.

Plantago major L.
P. lanceolata L.
P. maritima L.
P. Coronopus L.
Littorella uniflora Asch.

Atriplex patula L.
A. hastata L.
A. glabriuscula Edm.
Suaeda maritima Dum.
Salsola Kali L.

Polygonum Convolvulus L.
P. aviculare L.
P. Persicaria L.
Rumex obtusifolius L.
R. crispus L.
R. Acetosa L.
R. Acetosella L.

Urtica dioica L.
U. urens L.

Myrica Gale L.

Betula tomentosa Reith. & Abel.
Alnus glutinosa Gaert.
Quercus Robur L.
Fagus sylvatica L.

Salix aurita L.
S. purpurea L.
S. repens L.

Empetrum nigrum L.

Juniperus communis L.
Pinus sylvestris L.

Corallorrhiza trifida Châtel.
Listera cordata Br.
L. ovata Br.

Goodyera repens Br.
Orchis mascula L.
O. incarnata L.
O. latifolia L.
O. maculata L.
Habenaria virescens Druce.

Iris Pseudacorus L.

Narthecium ossifragum Huds.

Juncus bufonius L.
J. squarrosus L.
J. compressus Jacq.
J. Gerardi Lois.
J. effusus L.
J. conglomeratus L.
J. bulbosus L.
J. subnodulosus Schrank.
J. articulatus L.
J. sylvaticus Reichb.
Luzula pilosa Willd.
L. sylvatica Gaud.
L. campestris DC.
L. multiflora DC. & var. *congesta* (Lej.).

Typha latifolia L.

Lemna minor L.

Alisma Plantago-aquatica L.

Triglochin maritimum L.
Potamogeton polygonifolius Pourr.

Eleocharis palustris Br.
E. multicaulis Sm.
Scirpus setaceus L.
S. Tabernaemontani Gmel.
Eriophorum vaginatum L.
E. angustifolium Roth.

Carex arenaria L.
C. echinata Murr.
C. leporina L.
C. Goodenowii Gay.
C. flacca Schreb.
C. Oederi Retz.
C. inflata Huds.

Anthoxanthum odoratum L.
Alopecurus geniculatus L.
Agrostis canina L.
A. alba L., and var. *maritima* Meyer.
A. tenuis Sibth.
Ammophila arenaria Link.
Aira caryophyllea L.
A. praecox L.
Deschampsia caespitosa Beauv.
D. flexuosa Trin.
Holcus mollis L.
H. lanatus L.
Phragmites communis Trin.
Poa annua L.
Glyceria fluitans Br.
G. maritima Mert. & Koch.
Festuca ovina L.
F. rubra L., var. *duriuscula* (Syme).
Nardus stricta L.
Elymus arenarius L.

Blechnum Spicant With.
Dryopteris montana OK.
Polypodium vulgare L.

Equisetum arvense L.
E. palustre L.
E. limosum L.

Lycopodium Selago L.
L. inundatum L.
L. clavatum L.
Selaginella selaginoides Link.

THE VEGETATION OF BEINN LAOIGH.

By Donald Patton, M.A., B.Sc., Ph.D.

Beinn Laoigh, or, as it is sometimes written, Ben Lui, is situated on the borders of Argyllshire and Perthshire (lat. 56 degs. 24 N.; long. 4 degs. 48 W.), the actual summit being in the latter county. According to H. C. Watson's subdivision of Scotland the area under consideration lies partly in vice-county 98 (Argyll) and partly in 88 (Mid Perth). Beinn Laoigh is the highest of a group of four mountains at the western extremity of the Breadalbanes, and the 26th highest in Scotland. From west to east these summits are:—

Beinn a'Chliebh, ...	3008 ft.
Beinn Laoigh, ...	3708 ft.
Beinn Oss, ...	3347 ft.
Beinn Dubh Chraige, ...	3204 ft.

The Summit of Beinn Laoigh is five miles distant from Tyndrum, six miles from Dalmally and eight from Crianlarich or Ardlui. It is easiest of access from Tyndrum either by way of the Conenish Valley or by the Tyndrum-Dalmally road.

So much have the natural and ancient conditions of the vegetation of the British Isles been interfered with at the hand of man as well as by his flocks and herds, that the idea of making an ecological study of any area in these islands has oft been ridiculed. However, if there be a district where one would expect to be far from the influence of man it is to be found in the recesses of the Highlands of Scotland and such an area as that indicated affords an example. True it is that since 1741 the lead veins in this neighbourhood have, though somewhat intermittently, been exploited. But it is a long time since these mines were worked, though even to-day there are signs of renewed activity hard by. Meantime the Sphagnum and its peat have already healed up many of the old scars and the old mine road is slowly becoming part of the moor. Perhaps it is otherwise with regard to the deer and the sheep, although to some extent these animals, especially the latter, may be regarded as belonging to the area. This, of course, applies to their manner of feeding as well as to their agency in dispersing seed and in fertilising the soil. Where sheep have not access to the high lands occupied by the deer, as obtains in the Island of Jura, the vegetation is coarse and rank; but the sheep pastures, although occupying a similar situation and growing on like soil, are of a lusher green, a more tender herbage, and contain species not found in the deer forest. On Beinn Laoigh sheep and deer are not artificially kept apart. Again in the range of which Beinn Laoigh is the chief peak, there is no cultivation. The mountain sides are very steep; the drainage is natural. Only in the lower reaches of the main valleys has there been any attempt at artificial drainage. Thus 'mong the crags and corries of these mountain fastnesses,

> "Pleasant were many scenes, but most to me
> The solitude of vast extent, untouched
> By hand of art, where Nature sowed, herself,
> And reaped her crops; whose garments were the clouds;
> Whose minstrels, brooks; . . . . .
> Whose banquets, morning dews; whose heroes, storms;
> Whose warriors, mighty winds; whose lovers, flowers;
> Whose orators, the thunderbolt of God."

If we may judge from the literature extant, Beinn Laoigh was discovered botanically only within the last 50 years. In his "Flora of Perthshire" Buchanan White lays claim to the glory conjointly with Col. Drummond Hay. But there are living to-day not a few who recall the controversies to which that claim gave rise. Lightfoot, in his "Flora Scotica," makes no mention of Beinn Laoigh, though some of the plants submitted to him may have come from that mountain. Mr Peter Ewing submitted an extensive list of the plants of the district in No. 223 of *Science Gossip* in 1883, and in *Journ. Bot.* 9, 1888, Dr Druce gives a graphic description of the vegetation of Beinn Laoigh.

My own acquaintance dates from June 1911, when I was introduced to the mountain by Professor Bower. But from the end of the Great War until now I have visited the Ben at all seasons and have seen it in all its vicissitudes. I desire to acknowledge substantial assistance given by the Carnegie Trustees, whereby I was enabled to make an extensive survey of Beinn Laoigh and the neighbouring mountains of the Breadalbanes.

CONFIGURATION OF BEINN LAOIGH.

Beinn Laoigh owes its existence to the fact that the Glacial

Period terminated when it did. We see from the configuration of the mountain that the agencies of ice had a grip upon it. Vast, well-defined corries are gouged out from the very summit, and the base is overwhelmed in morainic detritus and boulder clay. Truncated spurs are a common feature, whilst the mountain-top detritus indicates the denuding power of the successive freezing and thawing which continued round the summit while yet the valleys were occupied by glaciers. With regard to the corries, the largest, Fionn Choirein, between Beinn a'Chleibh and Beinn Laoigh, faces the N.W., and Corrie Laoigh, between Beinn Laoigh and Beinn Oss, faces N.E. At a greater altitude and between these two, the grandest, the Perthshire Corrie or Coire Gaothach, also lies to the N.E., and to it the spurs of Stob Garbh and Stob an Tighe Airde give the striking sphinx-like appearance. Higher up still, between the Perthshire and the Argyllshire corries, Coire an Lochain faces due north. It is under snow for the greater part of the year. To the east is Coire ant Sneachda overlooking Allt Coire Laoigh. This stream with its tributary, Allt an Lund, which drains the northern crags of Laoigh, forms the headwaters of the River Tay. The N.W. slopes are drained by Allt Eas Daimh, a tributary of the Lochy, which flows into Loch Awe, while the southern hogback of Laoigh lies in the Clyde drainage area.

GEOLOGY.

Members of the Geological Survey of Scotland are at present working out the interrelation of the various rock formations in the metamorphic structure of the Highlands of Scotland. But the historic position of the various schists, grits and limestones does not materially alter the manner in which an approach may be made to the study of the rocks on Laoigh in connection with the vegetation The sequence may differ in Laoigh and Lawers and other members of the Breadalbanes, but what remains is that we have the rocks *in situ* and their derivatives to go upon irrespective of their position in geological time.

Starting with the summit of the Beinn—the mountain-top detritus already referred to rests upon its parent, the Garnetiferous Mica Schist, which in this area covers a wide range. It descends only to 3200 ft. in Coire an Lochan, but in its extent to the west it descends to 1700 ft. in Beinn a'Chliebh, which it likewise tops. On the east it descends in Coire Gaothach to 2400 ft., and in Allt Coire Laoigh to about 1300 ft. On the flank of Beinn Oss across Allt Coire Laoigh it is faulted down to an altitude of 1200 ft.

Underlying the Garnetiferous Mica Schists are the more or less Calcareous Mica Schists which extend down to the base of the mountain and the valley of the Conenish. In Allt an Lund they are seen overlying the Black Schist. The escarpment of Stob Garbh presents a fine section. With regard to these schists, the upper escarpments on the northern buttress of Laoigh, and underlying the Garnetiferous Mica Schists, are of the nature of Calc-Sericites. To the N.W., and especially in Allt Coire Laoigh, there are a series of faultings which present exposures of Quartz Mica Schists. Still on the northern escarpment of Laoigh there is, at an altitude of from 1400 ft. on the east in Fionn Choirein extending to 2600 ft. in Stob Garbh an exposure of Hornblende Schist. This schist also appears in two out-crops in the western stream which issues from the Coire Gaothach, the lower at about 1500 ft., the other about 100 ft. higher. It is found, too, for a considerable distance in Coire ant Sneachda at 1800 ft. Black Schist occupies the floor of the valleys from Conenish Farm via Ciochan Beinn Laoigh towards Dalmally.

In addition the area is traversed by an E. and W. Basalt dyke which outcrops on the northern escarpment of Laoigh at the county boundary at a height of 2200 ft., and continues westward to a height of 1600 ft. in the Allt Coire Ghaothaich which exposes a fine section. The dyke disappears under the soil on the west side of this stream, but can be picked up again further east in Beinn Oss, and it can also be traced to the west down the valley of the Allt Eas Daimh. Again, to the east of the Allt Coire an Lochain a Felsite Dyke running N.E. and S.W. forms a feature in the Ben. An exposure of Epidiorite appears between Coire an Lochain and Coire Gaothach outcropping from the Sericite; another large exposure forms a prominence in the valley of the Conenish just west of the junction of Allt an Lund and Allt Coire Laoigh.

Boulder Clay occupies the valleys, and moraines are frequent, in most cases topped by peat. Screes and the downcreep of the disintergrating rock form the link between mountain and boulder clay.

It is the calcareous rocks underlying the Garnetiferous Mica

Schist which bear the richest of the alpine flora. The crags here contain the western extension of the famous "Lawers-Caenlochan Schist" which has made Lawers and Clova each the Mecca of British Alpine Botanists. Such names as Cam Craig, Beinn Heasgarnich, The Ptarmigans near Killin, The Craig an Lochain Cliffs at Lochan a Larige, to mention only a few, are themselves inspiring. Ben Vrackie, too, at Pitlochry, is a link in the grand chain. These mountains, together with those of Clova, are among the many visited in connection with the Botanical Survey of Beinn Laoigh.

THE CLIMATE.

Many botanists have been disappointed on arriving at Tyndrum Station to find a thin mist driving down the glen, and not a ben visible. Repeated visits have shown that this is the rule rather than the exception. (The hot dry summers of 1901, 1911, 1921—strange sequence—gave the botanist a favourable opportunity of visiting the recesses of the mountain tops though they did not reveal the usual conditions under which the plants live.) In these mountains, snow lies all the winter, and even by May it has hardly receded above the 2000 ft. contour. The Upper Corrie has been known to retain its snow until August. Here, too, miniature glaciers are often seen. Specially severe are the conditions of those ledge and crag plants (Comophytes) which do not become covered with snow during the winter, but which are exposed to the biting winds at temperatures below freezing point as well as to a very considerable range of temperature according to the measure of insolation as day succeeds night. The season of the mountain flora is brief, and it is shortened as we ascend. The snow fills the springs, the rocks disintegrate to form a porous soil rich in mineral content, and, although low temperatures produce a quasi-physiological drought, the vegetation is lush. Moreover, mist clings to the mountains, and the valleys are drenched with a drizzling rain. The plants rear themselves within a continued precipitation and their roots gravitate into a sodden soil or into brimming crevices, whilst a continuous film of water seeks the streamlets through the lower leaves. Even when no rain falls the wind plays its part, for, gathering the water from the upland tarns, it hurls it against the overhanging cliffs, or, as the runnels discharge over the precipices, the wind converts the water into spray. Although this area is not a "land of brown heath and shaggy wood," it is essentially a "land of the mountain and the flood."

According to *The Journal of the Scottish Meteorological Society*, vol. x. (3rd series), the average annual rainfall for this district during 25 years (1866-90), is over 100 inches, and for Beinn Laoigh it may even exceed 130. The return for Glencroe is 128 ins., and for the Bridge of Orchy 118 ins., and Beinn Laoigh, lying between these stations, invites a heavier rainfall.

The relation between mists and insolation has also to be reckoned with in connection with the growth of the vegetation.

The following records have been taken from the *Journ. Scot. Meteor. Soc.*, vol. xi. (1895-96) :—

Tyndrum, 56 deg. 26 min. N., 4 deg. 43 min. W.
792 ft. above sea level.

Mean monthly and annual records.

	Barometer. 9 a.m. and 9 p.m. during 1857-95.	Temperature.
	INCHES.	DEGREES.
Jan.,	29.794	35.6 F.
Feb.,	29.858	36.4
Mar.,	29.824	37.5
Apr.,	29.889	42.1
May,	29.936	47.2
June,	29.939	53.0
July,	29.870	55.4
Aug.,	29.851	54.2
Sept.,	29.856	51.5
Oct.,	29.803	44.4
Nov.,	29.820	39.0
Dec.,	29.808	36.6
Annual.	29.854	44.4

In this region snow occasionally falls late in the year. On 4th May 1921 snow fell at Tyndrum.

THE FACTORS AT WORK.

As already mentioned, Beinn Laoigh is not on the regular beaten track of the excursionist. It is rather inaccessible. Even agriculture does not reach its slopes, although the influence of sheep has to be considered. There exists, too, on the approach to the Ben at Tyndrum, a remnant of the ancient Caledonian Forest which has afforded some interesting botanising in the past, chiefly to the bryologist and to the fungoloist.

In discussing the Vegetation of Beinn Laoigh, it is proposed to subdivide the area into the following localities, and to treat them seriatim :—

I. Conenish.
    Around the confluence of the Conenish River and Allt Eas Anie, and westward to the confluence of Allt an Lund and Allt Coire Laoigh.
II. The Head Valleys.
    Allt an Lund.
    Allt Coire Laoigh.
    Allt Eas Daimh.
III. Stob Garbh and the Northern Scarps.
IV. The Corries.
    The Perthshire Corrie (Coire Gaothach).
    The Argyllshire Corrie (Fionn Choirein).
    The N.W. (Upper) Corrie (Coire an Lochan).
V. The Grasslands of the Upper Slopes.
VI. The Mountain Top.

I. Around Conenish.

Conenish Farm, with its adjacent shepherd's house from which most of the excursions to the area were made, stands at the confluence of the R. Conenish and Allt Eas Anie. It is essentially a sheep farm. All the tillage that is done is confined to a very small walled-in area which is given up to the cultivation of natural hay, a few turnips, and potatoes. The farm buildings are considerably sheltered by high morainic accumulations. Here the Boulder Clay deeply overlies the Quartz Mica Schist which is being eroded and corroded by the rivers. In spite of the presence of the sheep farm and in spite of the previous occupation of a small area in the near vicinity by a small lead working community (the miners resided at Tyndrum, then called Clifton) there is very little evidence of introduced plants. Typical weeds of the farm are found only within the retaining wall already mentioned. The common Daisy, abundant on Lawers up to an altitude of 2800 ft., is here a rarity The writer knows only one locality for it (the roadside at Conenish) within the past twelve years, and he has never seen it grow on Beinn Laoigh. The margins of the path leading from the farm to the shepherd's house produce:—

Polygonum aviculare,
Rumex crispus,
R. Acetosa,
R. Acetosella

The last two Rumices are, of course, very abundant around the sheep fanks, where they are only, and only at times, subdominant to *Urtica dioica*, which on Beinn Laoigh grows unaccompanied by *Pteris*.

Allt Eas Anie and the Conenish River join below the farm. The vegetation of the one valley stands out in striking contrast with that of the other. At the close of the Ice Age these two valleys were left with a somewhat similar floor, for it may not be considered that the Boulder Clay deposited therein came from the slopes that the streams now drain. However that may be, the accumulation of Boulder Clay and morainic material in these valleys afforded an excellent substratum for the development of moorland. An investigation of the peat which now rests upon the Boulder Clay would doubtless show interesting divergent series of succession until the present vegetation is reached. So that to-day the valley of the Allt Eas Anie fed by water from the Quartz Mica Schist of Beinn Chuirn and the Quartzites of Meall Odhar, both exceedingly poor in mineral salts, is a Calluna-Vaccinium Moor. On the other hand, the valley of the Conenish, watered by the head-springs of the River Tay, which well from the calcareous flanks of Beinn Laoigh, rich in minerals luxuriates as a Grass Moor. (For the flora of this valley see the subjoined table.) Lower down the Conenish Valley, where it bends round towards Crianlarich, the Ancient Caledonian Forest persists and at no very remote period it existed at the upper reaches. To-day the roots of the pines are being dug out of the peat for firewood at Conenish. In the forest mentioned above and on the knolls arising from its swampy floor are to be found such plants as *Trientalis europaea*, *Pyrola media*, and *Listera cordata*; while in the sphagnum marshes of the wood (Coille Coire Chuile), there is great abundance of *Oxyccocus quadripetalus*, *Carex pauciflora*, and *Rynchospora alba.* At Conenish, however, the forest has gone, and the broken peaty moorland is not relieved by any trees save an occasional rowan or birch by the side of the river, and only where the stream has corroded deeply. Just above the confluence of the streams, in the sphagnum marshes of Allt Eas Anie, there is a wealth of *Drosera rotundifolia* interspersed with *D. anglica*, and here the hybrid, *D. obovata*, grows.

Above Conenish the Boulder Clay has been deeply corroded by the Conenish River, and the great erosion of past years has resulted in extensive stretches of alluvium. At places the channel has for the time reached its base level of denudation, so that during floods the wide alluvial tracts are silted, and fresh young grass and sedges render them a fertile pasturage in the summer months, simulating in this respect, though in miniature, the grassy holms of the Upper Clyde Valley. Species, of course, differ. Here are found, in the drier areas, *Agrostis canina*, *A. tenuis*, *Anthoxanthum odoratum*, *Festuca ovina*, *Cynosurus cristatus*, with *Prunella vulgaris*, *Lotus corniculatus*, *Potentilla erecta*, *Euphrasia officinalis.* In the wetter places the grasses are more or less replaced by Junci and members of the Cyperaceae. These also predominate where the alluvium is dissected by tributary streams.

On the old river terraces and on the higher slopes of the boulder clay by the stream sides, all stages in the formation of peat are found. The Vegetation is similar to that described under "The Head Valleys" save that in the wetter localities there is a greater abundance of *Erica Tetralix* and *Scirpus caespitosus.* *Myrica Gale* is locally abundant here, but it is exceedingly rare above the confluence of Allt an Lund and Allt Coire Laoigh.

The gravel stretches of the river, at altitudes around 900 ft., support, in addition to the general vegetation, such plants of the Ben as :—

Saxifraga oppositifolia.
S. aizoides.
Oxyria digyna.
Silene acaulis.
Alchemilla alpina.

Seeds of these—more probably whole plants—have been brought down from the upper reaches and the higher altitudes, and growth has been maintained at this lower level on account of the continuance of their former ecological conditions. These plants can be traced farther down the Conenish and into Strath Fillan (below 600 ft.) in similar localities. There is, too, in this Upper Conenish Valley, a waterfall which has carved out a sheltered gorge. Here arctic-alpines from the Ben luxuriate, flower and fruit often a month earlier than they do on the upland crags, viz. :—

Trollius europaeus.
Solidago Virgaurea.
Rubus saxatilis.
Sedum roseum.
Thalictrum alpinum.
Lycopodium Selago.
Geranium sylvaticum.
Galium boreale.
Thymus Serpyllum.
Saxifraga aizoides.
S. oppositifolia.
S. stellaris, etc.

Mention must be made of the straggling, storm-buffeted larch which rears itself within the precincts of Conenish Farm.

For a complete list of the plants of this area (and of the succeeding areas) see appendix.

II. The Head Valleys.

The Conenish River is formed by the junction of Allt Coire Laoigh and Allt an Lund. The old mine workings can be traced out along the banks of the latter near the confluence and at the base of the mountain proper. In the valley below these remains the peat hags reveal an abundance of the bleached roots of an ancient forest. Water lies long here, and the vegetation is scanty, consisting chiefly of tussocks of grass and sedge. Large boulders appear half-buried in the peat and, on sheep horns which are found lying in the shelter of these, *Onygena* occurs frequently.

(a) Allt an Lund.

The valley of this stream is more or less terraced, presenting two outstanding series of terraces, a wet series nearer the stream and, higher, a dry series which is being encroached upon by the screes and by the general downcreep of soil from the Ben. Characteristic of the former area are the following plants:—

Eriophorum vaginatum.
E. angustifolium.
Scirpus caespitosus.
Juncus squarrosus,
Molinia caerulea.
Juncus conglomeratus.
J. sylvaticus.
J. articulatus,
Luzula congesta.
Anthoxanthum odoratum.
Festuca ovina.
Carex echinata,
C. flava.
C. pulicaris.
Ranunculus Flammula.
Viola palustris.
Linum catharticum.
**Lysimachia nemorum.*
Trifolium repens.
Pinguicula vulgaris.
**Pedicularis palustris.*
Crepis paludosa.
Taraxacum officinale.
**Erica Tetralix*, sparingly.
**Calluna vulgaris*, sparingly.
**Triglochin palustre.*
Drosera rotundifolia.
Parnassia palustris.
Equisetum palustre.
E. sylvaticum.
Narthecium ossifragum.
**Malaxis paludosa.*

In addition to the above (omitting those marked with an asterisk which either are absent at the higher altitude or are not so frequent) and occupying the drier areas up to 1300 ft., the following plants are to be found :—

Festuca ovina, f. vivipara.
Nardus stricta.
Cynosurus cristatus.
Sieglingia decumbens,
Agrostis tenuis.
A. canina.
Alchemilla alpina.
A. vulgaris.
Thymus Serpyllum.
Galium saxatile.
G. boreale.
Geum rivale.
Rhinanthus Crista-galli.
Thalictrum alpinum.
Viola canina.
V. sylvatica.
Cardamine hirsuta.
Pedicularis sylvaticum.
Oxalis Acetosella.
Potentilla erecta.
Vaccinium Myrtillus.
Euphrasia officinalis.
Polygonum viviparum.
Tofieldia palustris.
Prunella vulgaris.
Erica cinerea.
Anemone nemorosa
Tussilago Farfara.
Hypochoeris radicata.
Angelica sylvestris.
Saxifraga hypnoides.
Primula vulgaris.
Polypodium vulgare.
Blechnum Spicant.
Cystopteris fragilis.
Phegopteris Polypodioides.
P. Dryopteris.
Dryopteris montana.
Deschampsia flexuosa.
D. caespitosa.

As the valley of the Conenish is ascended beyond the confluence it rapidly narrows. The slopes towards the stream are dissected by numerous natural tributaries. Thus the drainage is not impeded to any great extent by the moss and peat, and an abundant rainfall flushes the bogland. Add to this the fact that the waters from the Ben have traversed the region of the calcareous schists. Hence a grassy moorland type of vegetation occupies the valley. *Myrica Gale*, frequent below the confluence, now disappears. Sphagnum is very abundant on the lower terraces, especially where these are broad and level, and here *Malaxis paludosa* grows. Here, too, occasional bare patches of peat are exposed, which for the greater part of the year lie under water.

(b). Allt Eas Daimh.

The vegetation of this valley is similar to that of Allt an Lund. The calcareous schist escarpments extend beyond the col right down to the point where the stream traverses the lower slopes of the Argyllshire Corrie. In the lower reaches, before it flows under the railway to join the River Lochy, there is a series of kames where, on account of the nature of the deposits, the soil is more acid. Here are to be found a few clumps of *Pteris*, but they are local, the main character of the vegetation being that of a grassland, closely resembling that of the Upper Conenish. Boggy in places, this area is rich in mosses. ledges and bosses of *Polytrichum commune* and *Sphagnum* spp.—chiefly *S. cymbifolium* and *S. acutifolium*. These are conspicuous, especially in the late autumn, when the surrounding vegetation has died down. Here, too, are a few scattered birches, but they are lichen and moss clad and are slowly succumbing to the attack of fungi.

(c). Allt Coire Laoigh.

The head-waters of this valley drain an area poorer in calcareous schists, the rocks being more quartzose. However, the rocks are steeper and more deeply dissected by tributary streams. They are much drier and the lush vegetation is more confined to the margins of the numerous runnels. Away from these a rich vegetation is also maintained, which is due, no doubt, to the gravitating water in the subsoil. Further, and owing to the nature of the weathering of the schists, the debris of the mountain, brought down and scattered over the lower ground, though tending locally to be stiff, is well aerated and contains an abundant salt supply. The dominant vegetation is again of the grassy type. *Calluna vuglaris* is very scarce and, where found, is associated but sparingly with *Erica Tetralix* in the wetter places, and rarely with *E. cinerea* in the drier areas; but there is no attempt at a Calluna-Moor Association such as obtains in Allt Eas Anie.

These head-valleys are strewn with boulders and rock-masses from the overhanging crags. Such rocks, as well as the debris on the screes where it has come to the angle of repose, are gradually colonised by species of algae, lichens and bryophytes, the vegetation depending upon the time during which these rocks have been exposed to the working of the various ecological factors. An outstanding feature here, as with the rocks *in situ*, is to be found in the nature of the weathering of the different schistose rocks. Boulders of quartz-mica-schist may be practically barren, but where the quartz predominates the chief colonists are lichens, *e.g. Rhizocarpon geographicum* DC. Others of note here are *Platysma Fahlunense* Nyl., *Gyrophora cylindrica* Ach., *Lecanora sulphurea* Ach., etc., whilst around the base of the boulders *Rhacomitrium lanuginosum* is the most frequent moss. The garnetiferous-mica-schist affords a better surface for bryophytes and the boulders are usually mottled with lichens and mosses, species of *Rhacomitrium* (*R. aciculare*, *R. heterostichum*, *R. fasciculare*,) and species of *Andreaea*. The Calcareous Schists weather more readily than the above. They crumble away and leave a porous, friable surface which in wetter parts is the habitat of angiosperms as well as bryophytes, algae and lichens. Of the last mentioned these are of note :—*Lecanora tartarea* Ach., *L. parella* Ach., *Aspicilia poriniformis* A.L.Sm., *Rhizocarpon calcareum* T.F., *R. petraeum* Mass., and *Arthopyrenia allogena* A.L. Sm.

Further, plants have been brought down from the heights by the tributary streams, so that along the main streams in each of the three head-valleys, the following species are to be found growing on the escarpments overhanging the water :—

Selaginella selaginoides.	*S. aizoides,*
Saxifraga oppositifolia.	*S. stellaris.*

Silene acaulis.
Spiraea Ulmaria.
Solidago Virgaurea.
Galium boreale.
Oxyria digyna.
Plantago maritima.
P. lanceolata.
Pyrus Aucuparia.
Geranium sylvaticum.
Trollius europaeus
Lycopodium Selago.
Angelica sylvestris.
Heracleum Sphondylium.
Avena alpina.

III. Stob Garbh and the Northern Scarps.

Before dealing with the vegetation of the escarpments, which is the scope of this section, mention must be made of the grassy slopes which descend to the levels already described. Most noteworthy are those leading from Coire Gaothach which are watered, drained and soil-besprinkled by the two large streams issuing therefrom. The north-eastern exposure and the gradient of the slopes contribute towards a strong insolation during the greater part of the summer day. In the morning, however, the shadows of Ben Oss limit the range, as, in the evening, do the shadows of the Ben itself. The position of the corrie-lip causes the water-table to contribute to the slopes—reducing its head by percolating through the rocks underlying the slopes and causing moist hollows to appear, which are lush and rich in many of the characteristic flowers of the mountain. The soil is rich in lime content. A notable addition to the flora is found in *Kobresia bipartita*, and here too, *Juncus triglumis*, *J. castaneus* and *Carex saxatilis* are frequent. In the pockets of the sides of the cataracts, and at various altitudes, plants of the Stob Garbh escarpment are found, notably *Vaccinium uliginosum*. *Sedum roseum*, *Saxifraga oppositifolia* and even *Bartsia alpina*.

Stob Garbh rears itself to an altitude of about 2600 ft. from which height, to the north, east and west, there descend steep precipices and gullies. These continue from the Stob as bluffs and cliffs overhanging the Allt Eas Daimh, where they present a pseudo-terraced aspect. Mainly an outcrop of the Calcareous Schists, except where interrupted as previously described, by dykes, etc., it is, throughout its entire height, where soil accumulates, practically masked by the debris from the disintegrating calcareous schists. This specially refers to the small exposure of felsite. Where the felsite outcrops extensively, as it does on the summit of Ben Oss, it gives rise, on weathering, to angular fragments of a slabby nature and forms unstable, barren screes. (*Cf.* The Tinto Hills). Its vegetation simulates that of the quartzite. Where the Hornblende Schist outcrops, the vegetation is very much richer.

Stob Garbh is for the most part shunned by the sun's rays for the greater part of the year. The night frosts of the early summer hold throughout the day even although the sun may shine through an unclouded sky, and the icicles, pendulous from rock and vegetation alike, may only be thawed by circulating atmospheric currents. Many places in the escarpment never receive the direct rays of the sun. On the other hand, where the more prominent ledges outcrop, the vegetation of the pockets, crags and crevices experience an intense, if somewhat limited insolation; the atmosphere is warmed but the subsoil may be icebound. Alpine conditions obtain. The outcrop has its maximum verticle extent on the northern escarpment of Stob Garbh and gradually disappears E. and W. under morainic material and peat. Successive freezing and thawing cause many falls of rock in the spring. Hence the exposures present all stages of plant invasion from the newly formed, barren rock-faces over which the oozing water soon accounts for the presence of *Nostoc*, *Trentepholia*, etc. to the densely clad bosses with well established arctic-alpines. The nature of the escarpment—the lie of the fold—lends itself to the formation of pockets; for the outcrop here has a dip downwards into the mountain, and ledges are formed which unfortunately aid the unscrupulous collector. The reverse is obvious on Lawers where, on that account, pockets are not so well developed, and cases are extant where rare plants have at times disappeared from ledges simply by falling away with the soil that bears them. Nevertheless the comophytes of Lawers, though more frequently seen than those of Laoigh, gladden the heart—afar off! Mention has already been made of the mode of weathering of the schistose rocks. The sericite itself not only offers a resting place for a luxuriant vegetation but it gives to the pockets and ledges a rich soil not merely with regard to its chemical elements but also from the fact that it disintegrates to a porous soil with a suitable water-holding capacity and adequate aeration. The secret of its fertility may be due largely to these facts together with the influence of the biotic factor active in the accumulating humus. Since the less fertile rocks are besprinkled with the debris from the overlying decomposing calcareous outcrops, the general tendency is for the vegetation to become more uniformly distributed, the water supply being the chief differentiating factor. One point must not be lost sight of regarding the colonisation of these scarps and gullies, and that is, that members of diverse plant communities vary not only on account of the climatic, edaphic, topographic and biotic factors, nor even on account of competition, but also because of the chances that a grain of any seed has of falling to the ground.

Typical cushions of *Silene acaulis* and *Arenaria sedoides*, straggling outgrowths of *Sedum roseum*, *Saxifraga oppositifolia*, *Alchemilla alpina* and *Dryas octopetala* and, where the rock ledges are more extensive and cushions more compact and intergrown, *Bartsia alpina*, *Trollius europaea*, *Pyrola rotoundifolia*, *P. secunda*, *Geranium sylvaticum*, *Botrychium Lunaria* are common. Other plants are :—

Arabis petraea, var. *grandifolia*.
Draba incana,
Potentilla Crantzii.
Saussurea alpina.
Saxifraga aizoides,
S. nivalis,
Lycopodium Selago,
Geum rivale.
Solidago Virgaurea,
Campanula rotundifolia.
Asplenium viride.
Hypericum pulchrum.
Cochlearia alpina.
Cerastium alpinum.
C. vulgatum, var. *alpinum*.
Carex flava.
Statice planifolia.

Where the vegetation is more established owing to the soil being more stable, as on the more extensive ledges, these plants are to be found :—

Vaccinium Myrtillus.
V. Vitis-Idaea.
V. uliginosum.
Arctostaphalos Uva-Ursi.
Cerastium vulgatum.
Salix Arbuscula.
S. Myrsinites.
Carex atrata.
C. flava, var. *oedocarpa*.
C. binervis.
Galium sylvestre, var. *glabrum*.
Angelica sylvestris.
Heracleum Sphondylium.
Rhinanthus Crista-galli.
R. Drummond-Hayi.
Polygonum viviparum.
Geum rivale.
Plantago maritima.
Hieracium anglicum.
Deschampsia alpina.
Festuca rubra
Empetrum nigrum
Avena alpina.

And growing in some of the broader, moss-covered crevices in the crags:—*Cystopteris montana*, *C. fragilis*, *Polystichum Lonchitis* and *Blechnum Spicant*. The first mentioned is still to be found in great abundance along the scarps of the northern face.

On the more established screes at the base of Stob Garbh there is a wealth of *Saxifraga hypnoides*, (and associated with it, *S. quinquefida*), also *Cirsium heterophyllum*, *Euphrasia* spp., *Rhinanthus* spp., *Sagina saginoides* and *Potentilla erecta*, the whole merging down into the vegetation of the valley. The lichen, *Cerania vermicularis* S. F. Gray, is common here, and a rarity, the moss, *Orthothecium rufescens*, fruits here.

In sheltered crannies throughout these cliffs the following are met with:—

Adoxa Moschatellina.
Cardamine hirsuta.
Chrysosplenium oppositifolium.
Anemone nemorosa.
Oxalis Acetosella.
Saxifraga stellaris.

and among the mosses and liverworts, overtopping them and tending to oust them, the lichen, *Solorina saccata* Ach. is common

The habit of the vegetation of the more favoured gullies is most characteristic. Thanks to the shelter afforded them, the plants, in a kindly soil, develop a luxuriant foliage. *Alchemilla vulgaris* assumes a larger leaf and a more profuse inflorescence than it does by the streamsides in the lower valleys. A similar contrast is seen in plants at the same altitude, (a) in sheltered gullies. (b) on exposed ledges, *e.g.*:—

Solidago Virgaurea.
Sedum roseum.
Saussurea alpina.
Cochlearia micacea.
Geranium sylvaticim.
Vaccinium uliginosum.
Habenaria viridis.
Heracleum Sphondylium.

The glory of *Dryas* and *Pyrola*, blooming on the ledges of Stob Garbh, is never to be forgotten, nor are the magnificent festoons of *Saxifraga oppositifolia* nor the blooms of this Saxifrage peeping through the snow.

> "Upon the mountain ledges green
> The Saxifrage's purple sheen
> In many a splendid patch is seen
> *Salix herbacea* floreat!"

In 1921, at an altitude of 2000 ft., twenty-seven plants of *Saussurea alpina* were seen growing in one narrow pocket, all in full bloom. What beauty! What fragrance!

Plants of the sea-side are to be found here:—

Cochlearia officinalis (f. *alpina*).	*Plantago maritima.*
Sedum roseum.	*Statice maritima.*

No doubt, on the retreat of the ice at the close of the glacial period, because they had adapted themselves to experience a condition of physiological drought, they had a choice of undergoing it either at the sea-side in a halophyte habitat or in the vicinity of snow and ice. The manner in which these plants of the mountain overcome the difficulties attending this physiological drought, be it due to cold or to colloidal substances in the soil, is seen markedly in the development of the root system, not only in the crevices where the comophytes develop long roots, often branching repeatedly and invested with great felts of rootlets, but also in the pockets where the plants may penetrate through the frozen zone or extend widely in a soil which the biotic factors render habitable. Birds, as seed dispersing agents, may aid in the distribution.

The type of vegetation found on the northern exposures of Stob Garbh resembles very closely that which is so notable a feature of the escarpments of biotite-mica schist in the vicinity of Finse, which overlook the Hardanger Glacier in Norway (described in a paper read to the Botanical Society of Edinburgh—*Proc. Bot. Soc. Edin.*, Feb. 1915) much more than it does that on the limestone crags of the Swiss Alps.

IV. The Corries.

- A. Coire Gaothach—The Perthshire Corrie.
- B. Fionn Choirein—The Argyllshire Corrie.
- C. Coire an Lochain—The N.W. (Upper) Corrie.

A. Coire Gaothach.

Here there is great variety. From the edge of the corrie extending halfway back between the outstretched limbs of the "Sphinx" of B. Laoigh lies a very hummocky area consisting of morainic material, debris from the cliffs, and rocks outcropping *in situ.* This area is very fertile and is drained by streams which go to feed the two large burns that issue from the corrie. The vegetation of the tops of the knolls is stunted and consists chiefly of :—

Festuca ovina, f. *vivipara.*
Luzula spicata.
Lycopodium alpinum.
Cochlearia micacea.
Potentilla Sibbaldi.
Antennaria dioica.
Salix herbacea.
Gnaphalium supinum.
Alchemilla alpina.

Cetraria islandica is one of the commonest lichens here. On the slopes are found:—

Vaccinium Myrtillus.
V. uliginosum.
Euphrasia spp.
Veronica serpyllifolium, var. *humifusum.*
Epilobium alpinum.
Viola palustris.
Carex flava, var. *oedocarpa.*
Rumex Acetosa.
Festuca rubra.
Rumex Acetosella.
Nardus stricta.

Well up within the corrie the period of the vegetation is more limited still. The season is shortened on account of the lingering mantle of snow. Amongst the looser and larger rocks at the base of the screes *Alchemilla alpina* and *Galium saxatile* form a dense intergrowth, and there is local abundance of *Phegopteris Dryopteris P. Polypodioides*, *Cystopteris fragilis*, *Lycopodium Selago*, *L. clavatum* and *Cryptogramme crispa.* But it is on the screes themselves that the Parsley Fern luxuriates. It dominates the lower screes, and its extent can easily be traced from a distance, *e.g.*, from Conenish its characteristic yellow-green can be seen contrasting strongly with the colour of the surrounding vegetation and scree. The lower flushes, where the water wells out from the screes into the fresh green of the subjacent slopes, are characterised by a wealth of *Juncus castaneus.* The cliffs uprising from the screes are not so rich as those of Stob Garbh already described—the Garnetiferous Mica Schist here appearing on top. The walls of the corrie, because of its north-eastern exposure, shut out the direct rays of the sun from more than half of the corrie for the greater part of the day and at all seasons. Hence it is that, apart from tho edaphic factor, the shadowed area of the south-eastern scarps of the corrie are comparatively barren and limited in species, whilst the southern and south-eastern slopes and crags of Stob Garbh are luxuriant and the vegetation is more varied. The most striking of the arctic-alpines upon these more or less bare escarpments is *Arabis petraea*, var. *grandifolia* Druce.

The composition of the rock, its mode of weathering, the short period of insolation made shorter by the prevalence of mists, and above all, the exposure to an atmosphere in spring when the temperature is, oftener than not, below freezing point, though about mid-day it may be very considerably higher (the dormant vegetation of the corrie-floor lying buried under snow)—all these account for the barrenness of the rocky walls of the corrie from an altitude of 2600 ft. to one of 3700 ft. Add to these the fact that, higher up in the corrie, the screes are ever on the move, and that storms are very frequent. Ledges there are in the Garnetiferous Mica Schist where, in the height of summer, some species, *e.g.*, *Alchemilla alpina*, *Gnaphalium supinum*, *Salix herbacea*, *Luzula spicata*, *Festuca ovina*, f. *vivipara*, and curiously enough, *Cardamine hirsuta* and *C. pratense* manage to subsist; but they lack the floristic wealth of the sericite crags of Lawers at a similar altitude.

B. Fionn Choirein.

The Argyllshire Corrie is disappointing after working the Perthshire Corrie. Its exposure is more to the north-west. Larger and less corrie-like it descends to a lower altitude. Boggy at its exit into Allt Eas Daimh it produces several items of interest, *e.g.*, *Carex pauciflora* and *Malaxis paludosa*. The lower flanks of this corrie are associated with the rich calcareous schists, and the vegetation varies accordingly. Higher up its western side Beinn a' Chliebh is precipitous, and bears the richest flora, simulating that of the corresponding walls of Coire Gaothach. Its eastern slopes are more rounded, grassy slopes giving place to extensive screes as the ascent is made to the summit. These expanses are of unstable barren blocks and slabs down-slipping from the mountain-top detritus. The lower reaches of the corrie floor are a grass moor where the following grasses are locally dominant and often closely associated, interspersed with cushions of *Polytrichum commune* in the drier and *Sphagnum* spp. in the wetter areas.

Deschampsia flexuosa.
Festuca rubra.
Festuca ovina.
Agrostis canina.
Agrostis vulgaris.

and also *Juncus squarrosus*, *Carex flava*, and var. *oedocarpa*. The Corrie vegetation at its lower altitudes gradually merges into that of the lower reaches of Allt Eas Daimh already described.

C. Coire an Lochain.

In this upper corrie the vegetative season is shorter than in any other area. At the end of May, 1921, it was still almost completely filled with snow and ice. Miniature glaciers descended to the snow-covered lochan, while round the margin, where the soil had been laid bare, the black remains of decomposing vegetation suggested by their smell, cast up seaweed. Does the process of decay contribute in any way towards raising the temperature of the surrounding soil? There, were cushions of *Silene acaulis* of last year, and trailing branches of *Alchemilla alpina*, last season's stems of *Luzula spicata*, *Poa alpina* and of *Festuca ovina*. "Solvitur acris hiems grata vice veris et Favoni." The belated spring brought on a wealth of blooms, notably *Saxifraga nivalis*, in the more sheltered gullies; and on the more stable screes plant growth was abundant; by August the snow had disappeared and in vegetation this area simulated, though not so richly, the Perthshire corrie.

Although there is a sequence in time of flowering on the lower scarps, in the corrie the limited time demands almost an arctic condition—simultaneous flowering.

NOTE.—Coire Aonaich due south of the summit, and Coire ant Sneachda due east have not been discussed under the above heading since they are not in the same category as corries; but their vegetation is considered along with the other areas as, according to altitude, it conforms to that of the Mountain Top, The Upper Grassland and The Head Valleys.

V. The Grassland of the Upper Slopes.

The transition from the vegetation of the Head Valleys to that of the upper slopes is, in most areas around the Ben, very gradual. Though it may be expected that the more or less abrupt change in inclination where these areas abut should, because of the corresponding change in the drainage, bring about a corresponding change in the vegetation, still the flushing of the upper limits of the valley slopes by the water draining from off the mountain during periods of heavy rainfall scatters fine deposits of the weathered calcareous schists on the lower slopes. As already pointed out, these are also well drained. Hence the vegetation of the Upper Grasslands merges gradually into that of the valley. The altitudes at which this grassland actually commences vary not only with the configuration of the mountain but also with the direction of the exposure. To the north-west and north-east it descends almost to the moorlands already described (c. 2000 ft.) but to the south it has a higher range. There the heath and moor formations of the upper Loch Lomond Drainage Area, which extends to Laoigh from Glen Falloch by way of Gleann nan Caorrunn, give place to the Eriophorum and Grass Moor Associations which extend to an altitude of about 2500 ft.

Owing to the configuration of Beinn Laoigh and to the weathering of its outcrops, the area under grass is greatly restricted. Nevertheless, because of the fertility of the soil, the grassland is rich where the weathering detritus has come to the angle of repose. This is utilised for the grazing of sheep, and the hill is much frequented by deer. To the west the mountain-top detritus graduates down into a more or less barren scree extending all along the upper eastern slopes of the Argyllshire Corrie to a considerable and varying depth. Below this, however, the grassland becomes more and more established and is soon dense and luxuriant. The most representative species are :—*Festuca ovina*, *Agrostis canina*, *A. tenuis*, *Deschampsia flexuosa*, and *Anthoxanthum odoratum*, locally abundant being *Juncus squarrosus* which shows its characteristic habit in its spreading leaves. The grassland extends round to the northern flank of Laoigh and carpets the broad shelves which top the successive precipices. Where the ground is more broken owing to corrosion and erosion attending the flushing brought about by heavy rainfall, the ledges show large bright green tufts of *Polytrichum commune* associated with other bryophytes ; and where the water is more or less held up, cushions of Sphagnum with Junci are common. *Alchemilla alpina* is universal in this zone.

"Tha trusgan faoiliah air cruitan aonich."

Where the *Alchemilla* is replaced by *Potentilla Sibbaldi*, the contrast is most striking. This is well marked on the drier and more barren stretches where the pale green leaves of the former tend to become yellow whilst the latter, usually bluish-green in colour, is very often purple or deep crimson. Associated here with the grasses are :—

Ranunculus acris.
Viola Riviniana.
Potentilla erecta.
Alchemilla alpina.
Lotus corniculatus.
Linum catharticum.
Galium saxatile.
Narthecium ossifragum.
Taraxacum officinale.
Thymus Serpyllum.
Prunella vulgaris.
Euphrasia officinalis.
Plantago lanceolata.
Rumex Acetosa.
Luzula spicata.

to mention the chief.

To the north the escarpments are too frequent, denudation is ever altering the surface conditions. The broad ledges, however, bear a similar carpet to that already described save that, in addition, plants of the scarps have become established therein, notably :—*Solidago Virgaurea*, *Saxifraga hypnoides*, *S. quinquefida*, *Sagina saginoides*, *S. procumbens*, and *Cirsium heterophyllum*.

In Allt Coire Laoigh and on the southern flanks conditions are more favourable and there are well established grassy slopes,—alpine grasslands. *Festuca ovina*, f. *vivipara* is dominant, with *Anthoxanthum odoratum*, *Agrostis canina*, *A. vulgaris*, *Deschampsia flexuosa*, and, locally, *Deschampsia alpina*, *Sieglingia decumbens*, *Molinia caerulea* and *Nardus stricta*. Other plants most common to this area are :

Ranunculus repens.
Cerastium vulgatum.
C. alpinum.
Potentilla erecta.
Alchemilla vulgaris.
Galium saxatile.
Polygala vulgaris.
Campanula rotundifolia.
Vaccinium Myrtillus.
Plantago lanceolata.
Thymus Serpyllum.
Luzula spicata.
Juncus squarrosus.
Carex capillaris.

and *Carex rigida*, and occasionally :—

Thalictrum alpinum.
Sagina procumbens.
Trifolium repens.
Scabiosa Succisa.
Rumex Acetosa.
R. Acetosella.
Luzula multiflora.
Habenaria viridis.

VI. The Mountain Top.

Higher up the dominant plant still is *Festuca ovina*, but there is a greater abundance of *Juncus trifidus*, *Luzula spicata*, and *Carex rigida*. Mosses and lichens fill in the gap, or rather exclude the phanerogams because of their greater adaptability to the conditions obtaining. As the ascent is made to the top, the pockets become emptier, and the accumulation of the mountain-top detritus assumes a honeycombed appearance, block upon block, with no soil save in the smaller nooks and crannies where wind-borne or snow-borne or formed in situ on the boulder, sufficient earth has accumulated to enable the hardiest plant to obtain a roothold. Here, lichens are dominant, *Solorina crocea* being most in evidence. *Rhacomitrium lanuginosum* is the most abundant moss and associated with it are dwarfed specimens of *Salix herbacea*, *Carex rigida*, and *Festuca ovina* ff.

Near the summit, where the soil has accumulated in larger areas it is either barren or clad with vegetation; barren, because the surface soil of a preceding autumn has with its vegetation been displaced or plucked away by the winter's superincumbent and down-creeping snow. There are many such saucers, into which, on account of the inability of most species to set seed at this altitude, neighbouring plants take long to encroach vegetatively. Where the soil is carpeted with vegetation, moss and lichen prevail; but there is also scattered throughout this another flora,—trailing growths of *Salix herbacea*, and *Galium saxatile*, dense cushions of *Silene acaulis*, deeper in colour than the flowers on the lower crags, and clumps of *Gnaphalium supinum*. Over this assemblage of plants wave the inflorescences of *Deschampsia flexuosa*, *Festuca ovina* and *Luzula spicata*, whilst through it *Carex rigida* threads its way.

In the lists appended the species recorded for the mountain-top, (60 in all), are those found within the altitudes of 3250 ft. and 3708 ft. (the summit).

In this habitat the most important ecological factor is the water supply. Plants which exist here are only such as can withstand long periods of drought. As the summit is approached, standing water and streams become less frequent and do not often occur within 100 ft. of the top, even when there is no drought. The plants which grow in this area are dependable for their water-supply upon what rises by capillarity from the water table, upon rain, and upon mists. In dry seasons, such as occurred in the summer of 1901, 1911 and 1921, the supply from the water table is soon cut off and even for some time afterwards any surface water that may accumulate is unable to establish continuity with the water underneath owing to the fact that the soil and rock intervening have the interspaces filled with air. The surface water soon evaporates if the drought continues and relief to the plants is only temporary. The majority of the plants of the mountain-top are therefore dependent for their existence upon rain and mists. The adaptations which these species adopt to meet such conditions are chiefly confined to the underground portions. These are relatively very much more developed than the sub-aerial parts and ramify in all directions, penetrating deeply into the subsoil in order to tap a large mass of it, or following for comparatively great distances the joints and fissures in the rocks upon which they grow so as to be in the vicinity of the water which oozes the more readily that way. The roots and rootlets are in the latter case often densely felted and thus enable the plant to retain for a long time any excess of moisture which reaches it.

In the case of the Phanerogams and higher Cryptogams the sub-aerial portions, but especially the leaves, are more adapted to prevent excessive transpiration. (With regard to the mosses, liverworts and lichens which constitute such a large portion of the mountain-top flora their sub-aerial parts have to a very large extent also to do with water supply). The leaf formation, hairs, etc., are very varied in the arctic-alpine species. This has been fully considered in recent years, the most up-to-date publication applicable to the conditions obtaining on Beinn Laoigh appears in *The Scottish Mountaineering Club Guide*, vol. 1, Section A, by Professor F. O. Bower, on " Scottish Mountain Botany, with special Reference to the Flowering Plants," where he concludes, " These are then the salient features. . . . . A low, supine, often woody or succulent, glaucous or hairy vegetation it is, stunted and apparently ill-used so far as its leafy shoot is concerned, and often avoiding the production of flowers by the side alley of vegetative reproduction, called vivipary." A striking feature as the ascent is made towards the mountain top, is that the aquatic plants decrease in number until they would appear to be ousted by the species which at lower altitudes are found growing well away from wet conditions. These, *e.g.*, *Cochlearia* and *Cardamine*, above the 3000 ft. contour, are found by the mountain runnels.

Insolation and temperature, together with the considerable rarification of the atmosphere at these altitudes, have their effect upon the vegetation. The foliage has already been regarded in the light of transpiration but it is further modified to meet difficulties of respiration and of carbon assimilation brought about by the climate. Add to these the shortness of the open season. All these demand what has been observed under the microscope in sections cut,—a more intense green due to the increased amount of chlorophyll granules present in the cells of the mesophyll, a thicker lamina due to the deeper layer of the palisade parenchyma, a thicker cuticle and a more strongly developed parenchyma, and, area for area, (when leaves of the plants of the mountain-top are compared with leaves of the same species of the valley, even in this short range of altitudes), a greater number of stomata per unit of surface in the plants found at the highest altitudes These go to show that carbon assimilation and respiration proceed more rapidly and in measure tend to counteract the shortness of the vegetative season. The influence of the lower ranges of temperature has already been discussed for other areas. The cold dry air and the winds have a drying effect upon the plant tissues. The power of endurance is inversely proportional to the amount of contained water within the plant cells. In spite of it all, leaves of grasses and sedges may be incased in icicles, yet when the thaw comes they are found to be carrying on their vital processes. Arctic-alpine plants on Beinn Laoigh have been seen to continue to bud and flower though repeatedly retarded by frost and snow, being sometimes ice-bound for days.

The influence of light in connection with the size, colour, and the perfume of the flowers, the red pigmentation of stem, petiole and leaf, and the shade plants, need only be mentioned again here, as also the action of the wind at these altitudes and its bearing not only upon transpiration and the general habit of the plants but also upon its distribution of soil and detached portions of vegetation from other areas. Such action as the last can easily be observed on snow which has been lying for some time on the mountain.

Edaphic factors also come into play with regard to the vegetation of the mountain-top, especially if a comparison be made with the plant life on other *e.g.*, quartzite summits, the influence being due to the physical as well as to the chemical properties of the soil. For, on Beinn Laoigh, the disintegrating garnetiferous mica schist which forms the mountain-top detritus, although not so rich in minerals as the soil from the calcareous schists of lower altitudes, affords an ample source of calcium, magnesium and potassium, but it also weathers into a soil porous and suitable, in its water-holding capacity, for arctic-alpine plants,—a soil rich also in humus and its associated bacteria and other lower forms which aid as the biotic factor in making life possible to the boreal vegetation.

The Vegetation of the Areas may be summarised as follows :—

I Around Conenish.
  (a) Allt Eas Anie.
    Closed Moorland Associations, belonging to the Moor and
    ii. Arctic-alpine Grassland.
    Heath Formations.
    Scirpus Moor Associations. Moor Formation.
    Cottongrass Moor Associations. Moor Formation.
    Grass Moor Association. Moor Formation.
  (b) Upper Conenish.
  (b) Argyllshire Corrie.
II. The Head Valleys.
  Grass Moor Associations of the Moor Formation.
III. Stob Garbh and the Northern Scarps.
  Comophyte Formation.
  (a) Open Communities on exposed Rock Faces.
  (b) Associations of Sheltered Ledges.
  (c) Associations of Shade Comophytes.
  (d) Association of Hydrophilous Comophytes.
IV. The Corries.
    i. Comophyte Formation, as above.
  (a) Perthshire and the Upper Corries.
    i. Comophyte Formation.
    ii. Arctic-alpine Grassland.
    iii. Grass Moor Association. (Lower down).

V. The Grasslands of the Upper Slopes.
Arctic-alpine Grassland.
VI. The Mountain Top.
i. Moss Lichen Association.
ii. Rhacomitrium Associations.

P. Ewing, in *Trans. Nat. Hist. Soc. Glasgow*, 1902, reports on "The State of the Alpine Flora in Breadalbane during the last week of July, 1902." Here he refers to the fact that "owing to the prevalence of easterly winds and the want of sunshine during the greater part of the spring and summer months, the growth of vegetation was very greatly retarded." Similar conditions obtained in 1912 and again, strange sequence, in 1922, which again appeared to be adverse to the growth of arctic-alpines. It is noteworthy, in each of the three instances mentioned above, that the year preceding the one under review, (1901, 1911, 1921), was one of great summer heat, intense insolation on the mountain slopes, a very low summer rainfall and a comparative absence of the prevalent mists. To the writer it seems that the backward state of the vegetation in the years 1902, 1912, and 1922, although influenced by adverse weather conditions during the early parts of these years, was primarily due to the drought of the year preceding. During 1911 there was a great display of flowers on Beinn Laoigh, and again in 1921. The surrounding mountains likewise showed a wealth of blooms. On Lawers, *Saxifraga cernua* was specially abundant and flowered lavishly,—a very unusual occurrence, for it seldom flowers. During the years of drought the plants used up their reserve material in their effort to produce seed. Their perennating parts were depleted of their store, and the succeeding year found them weak. Some did not survive the drought. The important point which is brought out by the recurrence of years of drought is that the stability of the life of the vegetation of the mountain-top is interfered with and this should be borne in mind, in conjunction with the gradual amelioration of the climate, when the question of the survival of an arctic-alpine flora in Scotland falls to be discussed.

There are one or two factors which apply to the vegetation of Beinn Laoigh as a whole, and fall to be considered because of their bearing upon plant distribution. The influence of man has already been referred to and sheep have been mentioned as being responsible for the eradication and the introduction of species.

But the part played by insects is an important one, not so much in connection with pollination directly, since most of the plants of the Ben are perennial or are adapted on account of their limited season to reproduce vegetatively, but because insects, too, have to perpetuate their species. Galls are common on the vegetation (see Professor Trail, in *Ann. Scot. Nat. Hist.*, 1879-1880, on "Scottish Galls") and insect larvae are abundant in the capitula of many of the Compositae. *Saussurea alpina* (to instance one example) was observed by the writer to flower profusely on Beinn Laoigh, but the fact that the flowers seemed to wilt prematurely and to produce no seed was at first put down to the early advent of winter conditions. Closer observation, however, revealed the true cause—very few of the capitula examined during 1920, 21 and 22 were found to be free from larvae.

Perhaps the greatest enemies to the plant life of this mountain are the fungi, and perhaps there is no other area better suited for the study of the Uredineae, both hosts of each heteroecism occurring in close proximity. What is the significance of this? Are the Arctic-alpines tending towards extinction on account of these fungi? Approach another way. Is it the case that the ecological factors are in a sense adverse to these boreal plants and that there is (apart from the fungal attacks), a growing disability for them to maintain their existence, or, in other words, is this another reason for the disappearance of the rarer and more arctic of the mountain flora? If that is so, are these plants by nature less immune to fungal attack than they would be in more northern latitudes? One thing is obvious and that is, that where these species are found at home in the vicinity of the Dovre Fjeld in Norway they are comparatively free from fungi. The answer then is apparent.

So far the following have been identified by the writer:—

On *Thalictrum alpinum.*
  Puccinia septentrionalis Juel., ... (Aecidia).
  Puccinia borealis Juel., ... (Aecidia).

On *Saxifraga oppositifolia.*
  Melampsora alpina Juel., ... (Aecidia).

On *Alchemilla alpina*.
Uromyces alchemillæ, ...(Uredospores and Teleutospores).
On *Campanula rotundifolia*.
Coleosporium campanulae Lev., ...(Uredospores).
On *Polygonum viviparum*.
Puccinia Polygoni-amphibii Pers., ...(Teleutospores).
Puccinia septentrionalis Juel., ...(Teleutospores).
On *Salix Arbuscula*.
Melampsora alpina Juel., ...(Uredospores).
On *Salix herbacea*.
Melampsora alpina Juel., ...(Uredospores).
On *Anthoxanthum odoratum*.
Puccinia Anthoxanthi Fckl., ...(Uredospores).
On *Anemone nemorosa*.
Puccinia fusca Wint., ...(Teleutospores).

An interesting comparison may be made between the Arctic-Alpine Flora of Beinn Laoigh and the Arctic Flora as described by Sir Joseph Hooker in *Trans. Linn. Soc.* vol. xxiii, p. 256, and the Scottish Arctic-Alpine Flora (Professor Bower, on "Scottish Mountain Botany"). The species found on Beinn Laoigh may be classified thus:—

Arctic species.

According to Hooker's Arctic List, ... 302
(All these found in Arctic Europe).
According to Hooker's Arctic List, but not found in Arctic Europe, although in other Arctic areas (see Note 1, at end at Appendix A), ... 2
According to Hooker's "Student's Flora of the British Islands" (Note 2), ... 10

Total number of Arctic species, ... 314

Alpine species.

Of the above species over 300 are found on the Alps, Pyrenees or Caucasus.
In addition, according to Hooker's "Student's Flora" (Note 3), ... 8

Total Arctic-Alpine Species, ... 322

Non-Arctic-Alpines (Note 4),	50
Doubtful Species (Note 5),	16
Total for Beinn Laoigh,	388

Further, Hooker gives a list of the most arctic plants of general distribution that are found in all the arctic areas. Of these 36 are in the British flora, and 25 are found on Beinn Laoigh. In a second list he includes 22 species which occur in all the chief arctic areas around the pole, but usually do not attain such high latitudes as the foregoing. Of these, 17 are in the British flora, and 9 are found on Beinn Laoigh. Thus of the 83 most arctic plants, 53 are in the British flora, and 34 grow on Beinn Laoigh. (See *B.E.C. Report* for 1922—Patton, on "Variations in the Vegetation along the outcrop of the Lawers-Caenlochan Schist").

Another interesting feature is that the following 35 species are found at all altitudes on Beinn Laoigh :—

Thalictrum alpinum.
Ranunculus acris.
Viola palustris (2).
Silene acaulis (1).
Sagina procumbens.
Geranium sylvaticum.
Oxalis Acetosella.
Potentilla erecta.
Alchemilla alpina.
Saxifraga stellaris (1).
S. aizoides.
Sedum roseum (1).
Galium saxatile.
Taraxacum palustre (1).
Vaccinium Myrtillus.
Veronica serpyllifolia.
Thymus Serpyllum.
Plantago lanceolata.
Polygonum viviparum.
Oxyria digyna (1).
Rumex Acetosa.
R. Acetosella.
Juncus squarrosus.
Luzula multiflora (2).
Carex echinata.
Anthoxanthum odoratum.
Deschampsia caespitosa (1).
D. flexuosa.
Molinia caerulea.
Festuca ovina (1).
Nardus stricta.
Blechnum Spicant.
Lastrea Filix-mas.
Phegopteris Polypodioides.
Lycopodium Selago.

(1) These are in Hooker's list of 61 most arctic plants.

(2) These are in Hooker's second list of 22*.

**Draba rupestris* occurs in both of Hooker's lists.

The following table gives the number of species and varieties recorded for the various districts of Beinn Laoigh :—

(a)	Bienn Laoigh, aggregate,	388
(b)	Upper Conenish Valley,	185
(c)	The Head Valleys,	191
(d)	Argyllshire Corrie,	226
(e)	Perthshire Corrie,	114
(f)	North (Upper) Corrie,	68
(g)	Stob Garbh Crags,	245
(h)	Upper Grasslands,	86
(i)	The Summit Flora,	60

Details of the above are found in Appendix A.

The Flora of Beinn Laoigh may be summed up thus :—

Phanerogams,	350	*Equisetales*,	9
Filicales,	25	*Musci*,	191
Lycopodiales,	4	*Hepaticae*,	114

The ratio of Monocotyledons to Dicotyledons is 117/233 or 1 : 2 According to Hooker, the ratio for Arctic Europe is 1 : 2.3, and for the Arctic as a whole, 1 : 2.6.

APPENDIX A.

LIST OF PLANTS AND THEIR LOCALITIES.

I. Phanerogams, etc.
- (a) Aggregate.
- (b) Upper Conenish Valley.
- (c) Allt an Lund, Allt Coire Laoigh and Allt Eas Daimh.
- (d) Argyllshire Corrie.
- (e) Perthshire Corrie.
- (f) North (Upper) Corrie.
- (g) Stob Garbh Crags.
- (h) Upper Grasslands.
- (i) Summit Flora.

Note.—In a few cases plants (mostly critical species) have not been personally observed on the Ben. Numbers (as under) are used to indicate the authority :—

1. A. Bennett.
2. C. Bucknall.
3. G. C. Druce.
4. P. Ewing.
5. F. J. Hanbury.
6. E. S. Marshall.

	a	*b*	*c*	*d*	*e*	*f*	*g*	*h*	*i*
RANUNCULACEAE.									
Thalictrum alpinum L.	×	×	×	×	×	×	×	×	×
Anemone nemorosa L.	×	×	×	×	×		×		
Ranunculus hederaceus L.	×	×							
R. Flammula L.	×	×	×	×			×	×	
R. acris L.	×	×	×	×	×	×	×	×	×
R. Nathorstii A. Berl.	× 3								
R. repens L.	×	×	×	×			×	×	
R. Ficaria L.	×	×	×	×			×		
Caltha palustris L.	×	×	×	×		×	×		
var. *minor* Syme.	×			×	×	×	×		
C. radicans Forster.	× 3								
Trollius europaeus L.	×	×	×	×	×		×		
CRUCIFERAE.									
Radicula Nasturtium-aq. Druce. - - - - -	×	×		×	×		×		
Arabis petraea L.	×			×	×	×	×		×
var. *grandifolia* Druce.	×			×	×		×		
A. hirsuta Scop.	×			×			×		
Cardamine pratensis L.	×	×	×	×	×		×		
var. *palustris* (Peterm.)	×				×				
C. hirsuta L.	×	×	×	×	×		×		
C. flexuosa With.	×	×	×	×	×		×		
Draba incana L.	×			×	×		×		
var. *confusa* (Ehrh.).	×				×	×	×		
D. rupestris Br.	×						×		
Erophila verna E. Meyer.	×			×			×		
Cochlearia alpina Wats.	×			×	×	×	×	×	×
C. micacea Marshall.	×			×	×	×	×		
Sisymbrium Thalianum Gay.	×						×		
VIOLACEAE.									
Viola palustris L.	×	×	×	×	×	×	×	×	×
V. Riviniana Reichb.	×	×	×	×			×		
V. canina L.	×	×	×	×			×		
V. lutea Huds.	×	×	×	×			×		
f. *amoena* (Symons.).	×	×	×	×	×		×	×	
POLYGALACEAE.									
Polygala vulgaris L.	×	×	×	×			×		
P. serpyllacea Weihe.	×			×			×		

	a	*b*	*c*	*d*	*e*	*f*	*g*	*h*	*i*
CARYOPHYLLACEAE.									
Silene acaulis L.	×	×	×	×	×	×	×	×	×
Lychnis dioica L.	× 4								
L. Flos-cuculi L.	× 4								
Cerastium viscosum L.	×	×	×				×		
C. vulgatum L.	×	×	×	×	×		×		
C. alpinum L.	×			×	×	×	×	×	×
var. *pubescens* Syme.	×				×	×	×	×	×
Stellaria media L.	×			×			×		
S. Holostea L.	× 4								
S. graminea L.	×	×	×				×		
S. uliginosa Murr.	×	×	×	×	×		×		
Arenaria sedoides Froel.	×			×	×	×	×		×
Sagina procumbens L.	×	×	×	×	×	×	×	×	×
S. saginoides D.T.	×			×	×	×	×	×	×
S. scotica Druce.	× 3								
PORTULACEAE.									
Montia fontana L.	×	×	×	×			×		
HYPERICACEAE.									
Hypericum pulchrum L.	×	×	×	×			×		
LINACEAE.									
Linum catharticum L.	×	×	×	×	×		×	×	
GERANIACEAE.									
Geranium sylvaticum L.	×	×	×	×	×	×	×	×	×
G. pratense L.	× 4								
G. Robertianum L.	×	×	×						
Oxalis Acetosella L.	×	×	×	×	×	×	×	×	×
LEGUMINOSAE.									
Trifolium pratense L.	×	×							
T. repens L.	×	×	×	×	×		×	×	
Lotus corniculatus L.	×	×	×	×	×		×	×	
ROSACEAE.									
Spiraea Ulmaria L.	×	×	×	×			×		
Rubus saxatilis L.	×	×	×	×	×		×		
Dryas octopetala L.	×			×	×		×		
Geum rivale L.	×	×	×	×			×		
G. urbanum L.	×	×							

	a	*b*	*c*	*d*	*e*	*f*	*g*	*h*	*i*
Potentilla Crantzii G. Beck.	×			×	×		×		
P. erecta Hampe.	×	×	×	×	×	×	×	×	×
P. palustris Scop.	×	×	×						
P. Sibbaldi Hal. fil.	×			×	×	×	×	×	×
Alchemilla vulgaris L.	×	×	×	×	×	×	×	×	
A. alpestris Schmidt.	×		×	×	×	×	×	×	
A. alpina L.	×	×	×	×	×	×	×	×	×
Pyrus Aucuparia Ehrh.	×	×	×	×			×		
SAXIFRAGACEAE.									
Saxifraga oppositifolia L.	×	×	×	×	×		×		
S. nivalis L.	×			×	×	×	×		×
S. stellaris L.	×	×	×	×	×	×	×	×	×
S. aizoides L.	×	×	×	×	×	×	×	×	×
S. hypnoides L.	×		×	×			×	×	
S. quinquefida Haw.	×			×			×		
Chrysosplenium oppositifolium L.	×	×	×	×	×	×	×	×	
C. alternifolium L.	×	×					×		
Parnassia palustris L.	×	×	×	×			×		
CRASSULACEAE.									
Sedum roseum Scop.	×	×	×	×	×	×	×	×	×
S. anglicum Huds.	×						×		
DROSERACEAE.									
Drosera rotundifolia L.	×	×	×	×			×		
D. anglica Huds.	×	×	×						
D. ang. × *rot.* (*obovata* M. & K.).	×	×	×						
ONAGRACEAE.									
Epilobium montanum L.	×	×	×	×	×		×		
E. montanum × *E palustre*	×		×				×		
E. tetragonum L.	×	×					×		
E. palustre L.	×	×	×				×		
E. alsinifolium Vill.	×			×	×		×		
E. alpinum L.	×			×	×	×	×	×	×
UMBELLIFERAE.									
Hydrocotyle vulgaris L.	×	×	×				×		
Conopodium majus Loret.	×	×	×	×			×		
Angelica sylvestris L.	×	×	×	×			×		

	a	*b*	*c*	*d*	*e*	*f*	*g*	*h*	*i*
Heracleum Sphondylium L.	×	×	×	×			×		
CORNACEAE.									
Cornus suecica L.	× 4								
CAPRIFOLIACEAE.									
Adoxa Moschatellina L.	×			×			×		
RUBIACEAE.									
Galium boreale L.	×	×	×	×	×		×		
G. verum L.	×	×							
G. saxatile L.	×	×	×	×	×	×	×	×	×
G. asperum Schreb.	×	×	×	×			×		
var. *nitidulum* (Thuill.).	×			×			×		
G. palustre L.	×	×	×	×			×		
var. *Witheringii* (Sm.).	×	×	×	×			×		
var. *glabrum* Koch.	× 3								
Asperula odorata L.	×	×							
VALERIANACEAE.									
Valeriana officinalis L.	×	×	×	×			×		
DIPSACEAE.									
Scabiosa Succisa L.	×	×	×	×			×	×	
COMPOSITAE.									
Solidago Virgaurea L.	×	×	×	×			×		
var. *cambrica* (Huds).	×	×	×	×			×		
Bellis perennis L	×	×							
Antennaria dioica Gaertn.	×	×	×	×			×		
Gnaphalium supinum L.	×			×	×	×	×	×	×
Tussilago Farfara L.	×		×				×		
Carduus crispus L.	×	×							
Cirsium palustre Scop.	×	×	×						
C. heterophyllum Hill.	×		×				×		
C. arvense Scop.	×	×							
Saussurea alpina DC.	×			×			×		
Crepis taraxifolia Thuill.	×	×	×	×			×		
C. capillaris Wallr.	×	×	×	×			×		
C. biennis L.	×	×	×	×			×		
C. paludosa Moench	×	×	×	×			×		
Hieracium Pilosella L.	×	×	×	×			×		
H. anglicum Fr.	×			×			×		

	a	*b*	*c*	*d*	*e*	*f*	*g*	*h*	*i*
var. *acutifolium* Backh.	×			×			×		
var. *longibracteatum* F.J. Hanb.	×			×			×		
var. *cerinthiforme* Backh.	×			×			×		
H. flocculosum Backh.	× 5								
H. iricum Fr.	× 5								
H. holosericeum Backh.	×			×	×		×		
H. curvatum Elfstrand.	× 3								
H. lingulatum Backh.	× 5								
H. senescens Backh.	× 5								
H. sinuans F.J. Hanb.	× 5								
H. nigrescens Willd.	× 5								
H. Oreades Fr.	× 1								
H. callistophyllum F.J. Hanb. var. *glandulosum* F.J. Hanb.	× 6								
H. variicolor Dahlst.	× 6								
H. ciliatum Almq.	× 6								
H. pictorum Linton.	× 6								
H. pictorum Linton. var. *dasythrix* Linton.	× 3								
H. crebridens Dahlst.	× 6								
H. rivale F. J. Hanb.	× 5								
H. petrocharis Linton.	× 6								
H. sagittatum Lindeb. var. *lanuginosum* Lönhr.	× 6								
H. duplicatum Almq. var. *stenophyes* W. R. Linton.	× 6								
Hieracium anfractiforme E. S. Marshall.	× 6								
H. vulgatum Fr.	×			×			×		
H. Dewari Bosw.	× 5								
H. stictophyllum Dahlst.	× 6								
H. sparsifolium Lindeb.	× 5								
Hypochoeris radicata L.	×	×	×	×			×	×	
Leontodon hispidum L.	×	×	×	×			×		
L. autumnale L.	×	×	×	×			×		
var. *pratense* (Koch).	× 4								
Taraxacum officinale Weber.	×	×	×	×	×		×		
T. palustre DC.	×	×	×	×	×	×	×	×	×
CAMPANULACEAE.									
Campanula rotundifolia L.	×	×	×	×	×		×	×	

	a	*b*	*c*	*d*	*e*	*f*	*g*	*h*	*i*
var. *lancifolia* M. & K.	×			×	×		×		
VACCINIACEAE.									
Vaccinium Vitis-Idaea L.	×			×			×	×	
V. uliginosum L.	×			×	×		×		
V. Myrtillus L.	×	×	×	×	×	×	×	×	×
Oxycoccus quadripetalus Gilib.	×	×	×						
ERICACEAE.									
Arctostaphylos Uva-ursi Spreng.	×			×			×		
Calluna vulgaris Hull.	×	×	×						
Erica Tetralix L.	×	×	×						
E. cinerea L.	×	×	×						
Pyrola rotundifolia L.	×						×		
P. secunda L.	×			×			×		
PLUMBAGINEAE.									
Statice maritima Mill.	×		×	×			×		
S. planifolia Druce.	×			×			×		
PRIMULACEAE.									
Primula vulgaris Huds.	×	×	×						
Lysimachia nemorum L.	×	×	×				×		
GENTIANACEAE.									
Gentiana campestris L.	×	×							
forma *alba*.	×	×							
G. Amarella L.	×	×							
BORAGINACEAE.									
Myosotis caespitosa Schultz.	×	×							
M. scorpioides L.	×	×							
SCROPHULARIACEAE.									
Veronica serpyllifolia L.	×	×	×	×	×	×	×	×	×
V. humifusa Dickson.	×			×	×	×	×	×	×
V. officinalis L.	×	×		×			×		
V. Chamaedrys L.	×	×		×			×		
Euphrasia officinalis L.	×	×	×	×	×	×	×	×	
E. Rostkoviana Hayne.	× 3								
E. brevipila B. & G.	× 2								

	a	*b*	*c*	*d*	*e*	*f*	*g*	*h*	*i*
E. gracilis Fr.	×				×		×	×	
E. curta Wettst.	× 2								
var. *glabrescens* Wettst.	× 2								
E. foulaensis Towns.	× 3								
Bartsia alpina L.	×		×	×			×		
Pedicularis palustris L.	×	×	×	×					
P. sylvatica L.	×	×	×	×			×		
Rhinanthus Crista-galli L.	×	×	×	×			×		
R. borealis Druce.	×			×	×		×		
R. Drummond-Hayi Druce.	×			×	×		×		
Melampyrum pratense L.	×	×	×	×			×		
var. *montanum* (Johnst.).	×			×			×		
LENTIBULARIACEAE.									
Utricularia intermedia Hayne.	× 3		×						
Pinguicula vulgaris L.	×	×	×	×			×		
var. *bicolor* Nordstedt.	× 6								
LABIATAE.									
Thymus Serphyllum L.	×	×	×	×	×	×	×	×	×
T. Chamaedrys Fr.	× 3								
Prunella vulgaris L.	×	×	×	×					
PLANTAGINACEAE.									
Plantago maritima L.	×	×	×	×	×	×	×	×	
P. lanceolata L.	×	×	×	×	×	×	×	×	×
POLYGONACEAE.									
Polygonum viviparum L.	×	×	×	×	×	×	×	×	×
P. aviculare L.	×	×							
Oxyria digyna Gilib.	×	×	×	×	×	×	×	×	×
Rumex obtusifolius L.	×	×							
R. crispus L.	×	×							
R. Acetosa L.	×	×	×	×	×	×	×	×	×
R. Acetosella L.	×	×	×	×	×	×	×	×	×
EUPHORBIACEAE.									
Mercurialis perennis L.	×	×	×	×			×		
URTICACEAE.									
Urtica dioica L.	×	×	×						

	a	*b*	*c*	*d*	*e*	*f*	*g*	*h*	*i*
MYRICACEAE.									
Myrica Gale L.	×	×	×						
CUPULIFERAE.									
Betula alba L.	×	×	×	×					
Alnus glutinosa Gaertn.	×	×							
SALICACEAE.									
Salix aurita L.	×	×	×						
S. nigricans Sm.	×		×	×			×		
S. phylicifolia L.	×			×	×		×		
S. arbuscula L.	×			×			×		
S. arbuscula × *herbacea.*	× 6								
S. repens L.	× 4								
var. *ascendens* (Sm.).	× 4								
S. myrsinites L.	×		×	×	×		×		
S. myr. × *nigricans.*	×		×	×			×		
S. myr. × *phylicifolia.*	× 6								
S. herbacea L.	×			×	×	×	×	×	×
S. herb × *reticulata.*	×						×		
S. reticulata L.	× 4								
EMPETRACEAE.									
Empetrum nigrum L.	×		×	×			×		
ORCHIDACEAE.									
Malaxis paludosa Sw.	×		×	×					
Listera cordata Br.	×								
Orchis mascula L.	×	×	×	×			×		
O. maculata L.	×	×	×						
Habenaria conopsea Benth.	×	×	×	×					
H. viridis Br.	×			×	×		×		
var. *bracteata* A. Gray.	×			×			×		
LILIACEAE.									
Narthecium ossifragum Huds.	×	×	×	×			×	×	
Tofieldia palustris Huds.	×			×			×	×	
JUNCACEAE.									
Juncus bufonius L.	×	×	×						
J. trifidus L.	×		×	×	×	×	×	×	×
J. squarrosus L.	×	×	×	×	×	×	×	×	×
J. compressus Jacq.	×	×	×	×			×		

	a	*b*	*c*	*d*	*e*	*f*	*g*	*h*	*i*
J. effusus L.	×	×	×	×			×		
J. conglomeratus L.	×	×	×	×			×		
J. bulbosus L.	×	×	×	×			×		
J. articulatus L.	×	×	×						
J. alpinus Vill.	× 6			×					
J. sylvaticus Reich.	×	×	×	×			×		
J. castaneus Sm.	×				×		×		
J. biglumis L.	×				×	×	×		
J. triglumis L.	×		×	×	×	×	×	×	
Luzula pilosa Willd.	×	×	×				×		
L. sylvatica Gaud.	×	×	×				×		
L. spicata DC.	×		×	×	×	×	×	×	×
L. campestris DC.	×	×	×						
L. multiflora. DC.	×	×	×	×	×	×	×	×	×
var. *congesta* (Lej.).	×	×	×						
NAIADACEAE.									
Triglochin palustre L.	×	×	×	×			×		
Potamogeton polygonifolius Pourr.	×	×	×						
CYPERACEAE.									
Eleocharis palustris R. & S.	× 4								
Scirpus pauciflorus Lightf.	×						×		
S. caespitosus L.	×	×	×	×			×		
S. setaceus L.	×						×		
Eriophorum vaginatum L.	×	×	×	×					
E. angustifolium Roth.	×	×	×	×					
Rynchospora alba Vahl.	×	×	×						
Schoenus nigricans L.	×			×			×	×	
Kobresia bipartita D.T.	×		×						
Carex dioica L.	×		×	×			×		
C. pulicaris L.	×	×	×	×			×	×	
forma *montana* Pugsl.	×			×			×	×	
C. pauciflora Lightf.	×	×	×	×					
C. echinata Murr.	×	×	×	×	×	×	×	×	×
C. canescens L.	×		×						
C. leporina L.	×		×						
C. atrata L.	×			×			×		
C. gracilis Curt.	× 4								
C. rigida Good.	×		×	×	×	×	×	×	×
C. Goodenowii Gay.	×	×	×				×		
var. *juncella* (Fr.).	×			×			×		

	a	*b*	*c*	*d*	*e*	*f*	*g*	*h*	*i*
C. flacca Schreb.	×4								
var. *stictocarpa* Druce.	×4								
C. limosa L.	×			×	×		×		
C. pilulifera L.	×	×							
C. pallescens L.	×		×	×			×		
C. panicea L.	×		×	×	×		×	×	
C. vaginata Tausch.	×			×			×		
C. capillaris L.	×			×	×		×	×	
C. pendula Huds.	×4								
C. binervis Sm.	×		×	×			×	×	
var. *Sadleri* (Linton).	×3								
C. fulva Host	×			×			×	×	
C. flava L.	×		×	×			×	×	
var. *pumila* Anders.	×3								
var. *oedocarpa* Anders.	×	×	×	×			×	×	
var. *lepidocarpa* (Tausch).	×4								
var. *pygmaea* Anders.	×3								
C. flava × *Oederi*.	×3								
C. flava × *saxatilis*.	×3								
C. inflata Huds.	×4								
var. *brunnescens* Druce.	×3								
C. vesicaria L. var. *alpigena* Fr.	×3								
var. *dichroa* Anders.	×3								
C. saxatilis L.	×			×	×		×	×	
GRAMINEAE.									
Anthoxanthum odoratum L.	×	×	×	×	×	×	×	×	×
Alopecurus geniculatus L.	×	×							
Phleum pratense L.	×	×							
var. *nodosum* (L.).	×4								
Agrostis canina L.	×	×	×	×	×		×	×	
A. tenuis Sibth.	×	×	×	×	×		×	×	
A. pumila L.	×			×		×	×	×	
Deschampsia caespitosa Beauv.	×	×	×	×		×	×	×	×
var. *brevifolia*.	×			×			×	×	
var. *alpina*.	×			×			×	×	
D. alpina R. & S.	×			×	×		×	×	
D. flexuosa Trin.	×	×	×	×	×	×	×	×	×
var. *montana* Hook fil.	×3								
Holcus mollis L.	×								
H. lanatus L.	×	×							

	a	*b*	*c*	*d*	*e*	*f*	*g*	*h*	*i*
Avena pratensis L.	×		×	×			×		
var. *alpina* (Sm.).	×			×			×	×	
var. *longifolia* (Parn.).	× 6								
Sieglingia decumbens Bernh.	×	×	×	×			×	×	
Sesleria caerulea Ard.	×			×			×	×	
Cynosurus cristatus L.	×	×	×						
Koeleria gracilis Pers.	×		×	×			×	×	
Molinia coerulea Moench.	×	×	×	×	×	×	×	×	×
Poa annua L.	×	×	×						
var. *supina* Gaud.	× 3								
P. alpina L.	×			×	×	×	×	×	×
P. glauca Vahl.	× 4								
P. pratensis L., var. *humilis* (Ehrh.).	× 4								
P. Balfouri Parn.	× 4								
var. *montana* (Parn).	× 6			×	×				
P. nemoralis L.	×			×			×	×	
var. *montana* Gaud.	× 3								
var. *glaucantha* Reichb.	× 6								
Glyceria fluitans Br.	×	×							
Festuca bromoides L.	× 4								
F. ovina L.	×	×	×	×	×	×	×	×	×
var. *supina* Hackel.	× 4								
F. rubra L.	×		×	×	×	×	×	×	
var. *grandiflora* (Hackel).	× 3								
var. *pruinosa* Hackel.	× 4								
Nardus stricta L.	×	×	×	×	×	×	×	×	×
FILICES.									
Hymenophyllum peltatum Desv.	×			×			×		
Pteris aquilina L.	×		×						
Criptogramme crispa Br.	×			×	×				×
Blechnum Spicant With.	×	×	×	×	×	×	×	×	×
Asplenium Adiantum-nigrum L.	×	×	×				×		
A. viride Huds.	×	×	×	×	×		×		
A. Trichomanes L.	×	×	×				×		
Athyrium Filix-foemina Roth.	×	×	×						
A. alpestre Milde.	×			×	×	×	×	×	×
Woodsia alpina Gray.	×						×		
Cystopteris fragilis Bernh.	×	×	×	×	×		×		
var. *dentata* (Hook.).	×			×	×		×		×

	a	*b*	*c*	*d*	*e*	*f*	*g*	*h*	*i*
C. montana Desv.	×			×			×		
Polystichum Lonchitis Roth.	×		×	×	×	×	×	×	×
P. aculeatum Roth.	×	×	×				×		
Dryopteris montana OK.	×	×	×				×		
D. Filix-mas Schott.	×	×	×	×	×	×	×	×	×
var. *pumila* (T.M.).	×						×		
D. spinulosa OK.	×			×			×		
D. aristata Druce.	×			×	×	×	×	×	×
var. *dumetorum* (Sm.) Druce.	× 3								
Polypodium vulgare L.	×	×	×	×			×		
Phegopteris Dryopteris Fée	×	×	×	×	×		×		
P. polypodioides Fée.	×	×	×	×	×	×	×	×	×
Botrychium Lunaria Sw.	×			×			×		
EQUISETACEAE.									
Equisetum arvense L.	×	×	×	×			×		
E. pratense Ehrh.	×		×	×			×		
var. *alpestre* Wahl.	× 4								
E. sylvaticum L.	×		×	×			×		
E. palustre L.	×	×	×	×			×		
var. *polystachyon* Weis.	×	×							
E. limosum L.	×		×						
var. *fluviatile* (L.).	× 4								
E. variegatum Schleich.	× 4								
LYCOPODIACEAE.									
Lycopodium Selago L.	×	×	×	×	×	×	×	×	×
L. clavatum L.	×			×	×		×		
L. alpinum L.	×			×	×	×	×	×	×
SELAGINELLACEAE.									
Selaginella selaginoides Gray.	×			×	×		×	×	
	388	185	191	226	114	68	245	86	60

NOTE 1.—List of Species not included as Arctic Europe Species, but included in other of the Arctic areas by Hooker:—

Galium saxatile,	in Arctic Greenland.
	in Iceland.
	in the Alps.
Glyceria fluitans,	in Arctic West America.
	in Arctic East America.
	in Arctic Greenland.

NOTE 2.—List of Species not included in the List of Hooker's Arctic plants, but classified as such in his "Student's Flora of the British Islands":—

Hieracium flocculosum.
H. holosericeum.
H. lingulatum.
H. senescens.
H. Dewari.
Arabis petraca.
Geranium pratense.
Crepis paludosa.
Luzula sylvatica.
Carex pilulifera.

NOTE 3.—Species not included as Arctic Europe or in any other of the Arctic divisions, in Hooker's lists, but classified as Alpine in the "Student's Flora."

Arenaria sedoides.
Carex pulicaris.
C. glauca.
  var. *stictocarpa.*
Hieracium anglicum.
  var. *acutifolium.*
  var. *cerinthiforme.*
  var. *longibracteatum.*

NOTE 4.—List of Plants not included either as Arctic or as Alpine in the Lists of Hooker or in his "Student's Flora":—

Erophila verna.
Stellaria Holostea.
Hypericum pulchrum.
Chrysosplenium oppositifolium.
Sedum anglicum.
Hydrocotyle vulgaris.
Conopodium majus.
Heracleum Sphondylium.
Galium verum.
G. asperum.
  var. *nitidulum.*
Asperula odorata.
Bellis perennis.
Cirsium arvense.
Crepis taraxacifolia.
C. biennis.
C. capillaris.
Hieracium Pilosella.
Hypochoeris radicata.
Leontodon hispidus.
Erica Tetralix.
E. cinerea.
Primula vulgaris.
Lysimachia nemorum.
Pedicularis sylvatica.
Rumex obtusifolius.
R. crispus.
Mercurialis perennis.
Salix aurita.
S. repens.

Orchis mascula.
Potamogeton polygonifolius.
Scirpus setaceus.
Schoenus nigricans.
Carex pendula.
C. binervis.
C. fulva.
Holcus lanatus.
H. mollis.
Sieglingia decumbens.
Avena pratensis, and var. *alpina* and *longifolia.*
Sesleria caerulea.
Cynosurus cristatus.
Koeleria gracilis.
Festuca bromoides.
Hymenophyllum peltatum.
Asplenium Adiantum-nigrum.
A. Trichomanes.

Note 5.—Of the 29 Hieracia recorded for Beinn Laoigh, the following are not included in the calculations on p. 297, because for them, the data as to distribution are not available:—

H. curvatum.
H. crebridens.
H. sinuans.
H. Oreades.
H. callistophyllum, and var. *glandulosum.*
H. variicolor.
H. ciliatum.
H. anfractiforme.
H. sparsifolium.
H. Pictorum, and var. *dasythrix.*
H. rivale.
H. petrocharis.
H. sagittatum, and var. *lanuginosum.*
H. duplicatum, and var. *stenophyes.*
H. stictophyllum.

APPENDIX B.

Musci.—Arranged after " The Student's Handbook of British Mosses " (H. N. Dixon and H. G. Jamieson). Those listed have been confirmed by the writer.

SPHAGNALES.
Sphagnum cymbifolium Ehrh.
S. papillosum Lindb.
S. rigidum Schp.
S. tenellum Ehrh.
S. subsecundum Nees.
S. squarrosum Pers.
S. acutifolium Ehrh.
    var. *rubellum* Russ.
    var. *elegans* Braithw.
    var. *quinquefarium* Lindb.
    var. *deflexum* Schp.

ANDREÆALES.
Andreæa petrophila Ehrh.
A. alpina Smith.
A. falcata Schp.
A. crassinervia Bruch.

BRYALES.
Tetraphis pellucida Hedw.
T. Browniana Grev.
Catharinia undulata Web. & Mohr.
Oligotrichum hercynicum Lam.
Polytrichum nanum Neck.
P. aloides Hedw.
P. urnigerum L.
P. alpinum L.
P. sexangulare Ehrh.

P. strictum Banks.
P. commune L.
    var. *humile* Schp.
    var. *fastigiatum* Lyle.
Diphyscium foliosum Mohr.
Ditrichum homomallum Hampe.
D. flexicaule Hampe.
Swartzia montana Lindb.
S. inclinata Ehrh.
Seligeria recurvata B. & S.
Ceratadon purpureus Brid.
Rhabdoweisia fugax B. & S.
R. denticulata B. & S.
Cynodontium virens Schp.
Dicranella heteromalla Schp.
D. subulata Schp.
D. squarrosa Schp.
Dicranoweisia crispula Lindb.
Campylopus Schwartzii Schp.
C. flexuosus Brid.
    var. *paradoxus* Wils.
C. fragilis B. & S.
C. atrovirens De Not.
Dicranum fulvellum Smith.
D. falcatum Hedw.
D. Starkei W. & M.
D. schisti Lindb.
D. molle Wils.
D. Bonjeani De Not.
D. scoparium Hedw.
D. majus Turn.
D. fuscescens Turn.
Fissidens osmundioides Hedw.
F. adiantoides Hedw.
Grimmia apocarpa Hedw.
G. funalis Schp.
G. torquata Hornsch.
G. pulvinata Smith.
G. patens B. & S.
G. trichophylla Grev.
G. decipiens Lindb.
G. Doniana Sm.
Rhacomitrium aciculare Brid.
R. protensum Braun.
R. fasciculare Brid.
R. heterostichum Brid.
    var. *gracilescens* B. & S.
R. sudeticum B. & S.
R. lanuginosum Brid.
R. canescens Brid.
Ptychomitrium polyphyllum Fürn.
Hedwigia ciliata Ehrh.
Tortula muralis L.
T. subulata Hedw.
Barbula fallax Hedw.
B. rigidula Mitt.
B. convoluta Hedw.
B. unguiculata Hedw.
Leptodontium flexifolium Hpe.
Weisia viridula Hedw.
W. mucronata B. & S.
W. rupestris C. M.
W. curvirostris C. M.
    var. *commutata*.
    var. *scabra*.
Trichostomum tortuosum Dixon.
T. fragile Dixon.
Encalypta ciliata Hoffm.
E. commutata N. & H., var. *imberbis*.
E. rhabdocarpa Schwgr.
Zygodon lapponicus B. & S.
Z. Mougeotii B. & S.
Ulota Bruchii Hornsch.
    var. *intermedia* Brid.
U. crispa Brid.
U. phyllantha Brid.
Orthotrichum leiocarpum B. & S.
O. Lyellii H. & T.
O. affine Schrad.
Œdipodium Griffithianum Schwgr.
Splachnum sphaericum L. fil.
Tetraplodon mnioides B. & S.
Tayloria lingulata Lindb.
Funaria hygrometrica Sibth.
Amblyodon dealbatus P. Beauv.
Meesia tricholdes Spruce.
Aulacomnium palustre Schwgr.
Catoscopium nigritum Brid.
Conostomum boreale Swartz.
Bartramia Œderi Sw.

B. ithyphylla Brid.
B. pomiformis Hedw.
B. Halleriana Hedw.
Philonotis fontana Brid.
f. *falcata* Brid.
P. calcarea Schp.
Breutelia arcuata Schp.
Webera acuminata Schp.
W. polymorpha Schp.
W. elongata Schwgr.
W. cruda Schwgr.
W. nutans Hedw.
W. annotina Schwgr.
W. carnea Schp.
Plagiobryum Zierii Lindb.
Bryum filiforme Dicks.
B. pendulum Schp.
B. inclinatum Bland.
B. pallens Sw.
B. turbinatum Schwgr.
B. turbinatum Schwgr., var. *latifolium* B. & S.
B. pseudo-triquetrum Schwgr.
B. pallescens Schleich.
B. caespiticium L.
B. capillare L.
B. erythrocarpum Schwgr.
B. alpinum Huds.
B. argenteum L.
Mnium undulatum L.
M. hornum L.
M. serratum Schrad.
M. punctatum L.
Neckera crispa Hedw.
N. pumila Hedw.
N. complanata Hübn.
Homalia trichomanoides Brid.
Antitrichia curtipendula Brid.
Thuidium tamariscinum B. & S.
T. delicatulum Mitt.
Isothecium myurum Brid.
Cylindrothecium concinnum Schp.
Orthothecium rufescens B. & S.
O. intricatum B. & S.
Pleuropus sericeus Dixon.
Brachythecium rutabulum B. & S.
B. rivulare B. & S.
B. Starkei B. & S.
B. plumosum B. & S.
B. purum Dixon.
Eurhynchium Swartzii Hobkirk.
E. myosuroides Schp.
Plagiothecium pulchellum B. & S.
P. denticulatum B. & S.
P. undulatum B. & S.
Amblystegium Sprucei B. & S.
A. filicinum De Not.
Hypnum stellatum Schreb.
H. uncinatum Hedw.
H. revolvens Sw.
H. commutatum Hedw.
H. falcatum Brid.
H. cupressiforme L.
H. hamulosum B. & S.
H. molluscum Hedw.
H. crista-castrensis L.
H ochraceum Turn.
H. scorpioides L.
H. trifarium W. & M.
H. cordifolium Hedw.
H. giganteum Schp.
H. sarmentosum Wahl.
H. cuspidatum L.
H. Schreberi Willd.
Hylocomium splendens B. & S.
H. loreum B. & S.
H. squarrosum B. & S.
H. triquetrum B. & S.

APPENDIX C.

Hepaticae.—Arranged after "The Student's Handbook of British Hepatics" (S. M. Macvicar).

MARCHANTIALES.

Targionia hypophylla L.
Conocephalum conicum (L.) Dum.
Preissia commutata Nees.
Marchantia polymorpha L.

JUNGERMANNIALES.

ANACROGYNAE.

Aneura pinguis (L.) Dum.
A. multifida (L.) Dum.
A. sinuata (Dicks.) Dum.
Metzgeria furcata (L.) Dum.
M. conjugata Lindb.
M. hamata Lindb.
M. pubescens (Schrank) Raddi.
Pallavicinia Lyellii (Hook.) Gray.
Moerckia Blyttii (Moerch) Brockm.
Pellia epiphylla (L.) Corda.
P. Neesiana (Gottsche) Limpr.
P. Fabbroniana Raddi.
Blasia pusilla L.

ACROGYNAE.

Gymnomitrium concinnatum (Lightf.) Corda.
G. obtusum (Lindb.) Pears.
G. corallioides Nees.
G. crenulatum Gottsche.
G. adustum Nees.
G. varians (Lindb.) Schiffn.
G. crassifolium Carr.
G. alpinum (Gottsche) Schiffn.
Marsupella Sprucei (Limpr.) Bernet.
M. aquatica (Lindenb.) Schiffn.
M. emarginata (Ehrh.) Dum.
Alicularia compressa (Hook.) Nees.
A. scalaris (Schrad.) Corda.
A. Geoscyphus De Not.
Eucalyx obovatus (Nees) Breidl.
E. hyalinus (Lyell) Breidl.
Aplozia crenulata (Sm.) Dum.
var. *gracillima* (Sm.).
A. sphaerocarpa (Hook.) Dum.
A. cordifolia (Hook.) Dum.
A. riparia (Tayl.) Dum.
A. pumila (With.) Dum.
Jamesoniella Carringtoni (Balf.) Schiffn.
Gymnocolea inflata (Huds.) Dum.
Lophozia Muelleri (Nees) Dum.
L. ventricosa (Dicks.) Dum.
L. alpestris (Schleich.) Evans.
var. *gelida* (Tayl.).
L. incisa (Schrad.) Dum.
L. quinquedentata (Huds.) Cogn.
L. lycopodioides (Wallr.) Cogn.
L. Hatcheri (Evans) Steph.
L. Floerkii (Web. et Mohr) Schiffn.
L. barbata (Schmid.) Dum.
Sphenolobus minutus (Crantz) Steph.
S. politus (Nees) Steph.
S. exsectus (Breidl.) Steph.
Plagiochila asplenioides (L.) Dum.
var. *minor* Lindenb.
P. spinulosa (Dicks.) Dum.
Leptoscyphus Taylori (Hook.) Mitt.
L. anomalus (Hook.) Mitt.
Lophocolea bidentata (L.) Dum.
L. cuspidata Limpr.
L. heterophylla (Schrad.) Dum.
Chiloscyphus polyanthus (L.) Corda.
Harpanthus Flotowianus Nees.
Saccogyna viticulosa (Sm.) Dum.
Cephalozia bicuspidata (L.) Dum.
C. Lammersiana (Hüb.) Spruce.

Hygrobiella laxifolia (Hook.) Spruce.
Pleuroclada albescens (Hook.) Spruce.
Odontoschisma Sphagni (Dicks.) Dum.
O. denudatum (Nees) Dum.
Calypogeia Trichomanis (L.) Corda.
C. fissa (L.) Raddi.
Bazzania trilobata (L.) Gray.
B. tricrenata (Wahl.) Pears.
B. triangularis Pears.
Lepidosia reptans (L.) Dum.
L. setacea (Web.) Mitt.
Blepharostoma trichophyllum (L.) Dum.
Anthelia julacea (L.) Dum.
A. Juratzkana (Limpr.) Trevis.
Herberta adunca (Dicks.) Gray.
Mastigophora Woodsii (Hook.) Nees.
Ptilidium ciliare (L.) Hampe.
Trichocolea tomentella (Ehrh.) Dum.
Diplophyllum albicans (L.) Dum.
D. taxifolium (Wahlenb.) Dum.
Scapania compacta (Roth) Dum.
S. aequiloba (Schwaegr.) Dum.
S. gracilis (Lindb.) Kaal.
var. *laxifolia* Carr.
S. aspera Bernet.
S. nemorosa (L.) Dum.
S. nimbosa Tayl.
S. ornithopodioides (With.) Pears.
S. dentata Dum.
S. undulata (L.) Dum.
S. uliginosa (Swartz) Dum.
S. paludosa K. Müll.
S. irrigua (Nees) Dum.
Radula complanata (L.) Dum.
R. Lindbergii Gottsche.
var. *germana* (Jack).
Pleurozia purpurea (Lightf.) Lindb.
Madotheca laevigata (Schrad.) Dum.
M. platyphylla (L.) Dum.
M. rivularis Nees.
***Lejeunea cavifolia* (Ehrh.) Lindb.**
L. patens Lindb.
Frullania germana Tayl.
F. Tamarisci (L.) Dum.
var. *atrovirens* Carr.
F. fragilifolia Tayl.
F. dilatata Dum.

APPENDIX D.

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VIOLET NOTES FOR 1924.

By E. S. Gregory.

V. HIRTA × ODORATA (× GIGAS). Found by me, originally in the parish of Stokeinteignhead (v.-c 3), March 1913. Flowers averaging 3 cm. in length. Examinations of this plant have been made from time to time during the last ten years, and have been principally on cultivated material. The first note on this violet reads thus :—" A plant found March 13, 1913, had stipules 8 mm. broad at base and for two-thirds of their length ; the tip concave on one side and convex on the other, suddenly narrowing to a point. The flower, of an exquisite pale mauve colour, had a large white eye. The lateral petals were very much inflected, and made it useless at this date to measure the breadth of the flowers. The whole plant was of a thick texture, as in *V. odorata*, var. *floribunda*. A portion of the only plant we were able to find was removed by Miss

Peck and placed in a pot in her greenhouse at Maidencombe House. It remained there until established, and was then planted in her garden. The second examination on portions of the original plant in 1914 notes :—Leaves rounded at apex, hairs slightly depressed as in plants of *V. hirta* × *odorata* ; flowers scentless, of a pale mauve colour, on long peduncles (11-12 cm.); bracts 1 cm. in length × 5 mm. in breadth at base ; spur thick ; flowers averaging 3 cm. in length and breadth. I suspect this new form of *V. hirta* × *odorata* to be the cross var. *dumetorum* × *hirsuta*. My notes on × *gigas* in 1915 refer to a peculiarity which occurs in the form of lobes of uncertain size and shape at the base of the laminae. I believe these to be produced only by plants in a state of cultivation, and chiefly in the summer state of development.

A giant race has cropped up in *Primula sinensis* from certain crossings. This giant race does not consist of large plants but of ordinary-sized plants with large flowers. Natural crossings may have originated a giant race in the genus *Viola*.

THE PURSUIT OF DAPHNE.

Not the least charming of the many legends in the Greek mythology is that of Daphne, the beautiful maiden who, praying for heaven's aid when pursued by Apollo, was straightway changed into a laurel, and in that shape continued for ever to be the sun-god's favourite. Even in this sceptical age I think we flower-lovers must feel grateful to Apollo for the addition thus made to the world's *flora* ; but in one matter I venture to doubt the accuracy of the story, for I cannot believe that the metamorphosed nymph is to be found in that respectable, but not very thrilling shrub, the Bay (*Laurus nobilis*), when we have among us so entirely lovable and enchanting a flower as the Daphne of the Persian name, *Mezereum*. To us, at any rate, whatever the Greeks may have fabled, this is the true Daphne, the beloved of Apollo and of everyone who worships the beauty that is divine. For surely there are few sights more welcome to a botanist than when in the early months of the year, while the woods are still leafless, he feasts his eyes upon this slim, graceful little plant with the pink flowers that outrun the foliage, alike rich in fragrance and delicate in form. I wish that Professor Henslow, and other writers on the " uses " of plants, had not told us that our Daphne is " a recognised drug," and " powerfully irritant "; for her best use is simply to be beautiful, and it is difficult to think of her at all as a " drug," or as associated with the British Pharmacopœia. The case of her larger sister, the Spurge Laurel, is somewhat different; for though I have a great respect, and even liking, for that honest and sturdy shrub, I must admit that she is at times apt to be an irritant, even a powerful one, when she obtrudes herself on the notice of a flower-lover who is seeking vainly for the other Daphne. When one is hoping to see the Mary of the family, it is a little trying to have a succession of interviews with the Martha. According to some writers, our Daphne is " doubtfully wild " in this country. I wonder whether it would be more correct to say that she is doubtfully tame. Certainly the process that is at present going on is one not of naturalisation but of denaturalisation; she is not being let loose from the garden into the wilderness, but deported from the wildnerness to the garden. She is one of those too beautiful flowers whose beauty is their undoing, inasmuch as it courts domestication. What are we to say of a man who goes into the woods with a spade, and digs up a *Daphne mezereum* as he might a turnip or a potato? Is such a pursuer of the nymph to be called an Apollo? I think, rather, an Apollyon, which means " one that exterminates," would be the fitter title.

One such Destroyer I met last season in the person of a lodge-keeper, at a park in West Sussex, a wooded district where the *Daphne mezereum* has long been regarded as a native. He was not breathing forth flames, as the original Apollyon did; he was, in fact, a very civil and obliging fellow; but when I saw him in his garden, and asked him over the hedge if he knew a wild plant called the Daphne, he pointed to a corner of the enclosure, and said triumphantly: " There is one." I learnt that his Daphne, which was then in bloom, was one of two that had been found in the woods a year or two before, and had shared the usual fate of their tribe.

When I told the good man that I had been unsuccessfully searching the woods for a flower of that species, he showed great willingness to do me a service, and promised to let me know if he again came across the plant. "You shall have one," he said hopefully, as I wished him good day. Luckily something in this remark caused me to explain that what I wanted was a sight of the plant growing, not a specimen of it dug up. At this he looked very puzzled, and I could see that I had fallen fearfully in his estimation, as one who must be considered a wandering half-witted crank, whereas he had at first taken me for a gentleman with a garden (perhaps even a park) of my own.

Well, as Apollo failed in his pursuit of Daphne, I suppose a mortal ought not to complain; but in truth I was luckier than Apollo, for when, after spending two or three days in roaming about the woods west of Arundel, I returned home empty-handed, drenched in the rain and hail storms which are the modern substitutes for "April showers," I found on my table a letter from a friend in East Sussex, who wrote: "I can show you the *Daphne mezereum*, wild, of course, if you care to come over here. I *did* care to go over there; and so for the first time—and I hope not the last—I saw the beloved of Apollo in all her beauty.

Henry S. Salt.

ORCHIS MACULATA L. and O. FUCHSII Druce

BY

G. Claridge Druce.

Under this heading in *Rep. B.E.C.* 99, 1914, I argued that British botanists had been holding a wrong conception of the Linnean *O. maculata.* That is now ten years ago, and as it is evident that some botanists have not the paper at hand, some of its salient features are here reproduced, and a reply made to the objections raised by Colonel Godfery in a paper contributed to *Journ. Bot.* 306, 1923. This I answered (*l.c.* 198, 1924), but as my MS. was submitted to Colonel Godfery by the Editor, he was enabled to write an additional note in which, with some change of front, fresh points were raised. These barely touch the main issue, but I wish to reply to some of them. Mainly, he seems to agree that we are dealing with two distinct species—

an important onward step. The chief point of difference between us is that if two species of the Spotted Orchis occur which, if either, shall bear the original name.

In the paper referred to I showed that the description in the *Species Plantarum*—"Petala 3 exteriora erecta; 2 interiora conniventia. Nectarii labium trifidum, planum: lobis lateralibus majoribus crenatis; intermedio angustissimo, integerrimo" fitted the plant which Linton (*Fl. Bournemouth* 208, 1902) named sub-sp. *ericetorum* and Webster (*British Orchids* 54, 1886) described as *O. maculata praecox.* My description added little to that given by Linnaeus, but I described *O. Fuchsii* and showed in what manner it differed. For convenience, the descriptions of the flowers of the two species are reprinted.

O. maculata vera. Flowers conspicuous, broad, pale, or of different shades of lilac-purple, the markings fainter than in *Fuchsii*, and the margins less distinct, often crenulate. The lateral lobes of the labellum large, rounded, flat, much larger than the median one, which is sometimes quite small and rarely as long, or longer than the side ones.

O. Fuchsii. Labellum deeply three lobed, the lobes subequal, the centre longer and somewhat larger than the lateral, entire. The lateral lobes have their outer margin straight, or only slightly curved, or rounded, slightly crenate or entire.

Three years later, in the fifteenth edition of *Hayward's Botanist's Pocket Book* 277, I gave the contrasting features of the flowers.

O. maculata. Labellum tri-lobed, the lateral segments larger than the middle one, and as long or longer.

O. Fuchsii. Labellum tri-lobed, the middle segment as large and longer than the lateral.

As will be seen there is no reference to the three words "intermedio angustissimo, integerrimo," detached from their context, on which Colonel Godfery says my case rests. The statement, which has not the shadow of foundation, can only be explained by a misunderstanding as to the characters of the two plants. This view is borne out by the inability of Colonel Godfery to find true *maculata* on the Continent—indeed, the Messrs Stephenson in *Journ. Bot.* 126, 1921, say Colonel Godfery, in writing and conversation, frequently insisted that *ericetorum* is not found on the Continent at all—and by his inability to identify the Linnaean herbarium specimen. This assumes that some different concept of true *maculata* is held. Yet Colonel

Godfery is positive that *ericetorum* is identical with *O. elodes* Griseb., and suggests that this is the valid name, overlooking the fact that if it is identical the Linnean name *maculata* is 90 years older and must have precedence. Nor is it logical to say that *ericetorum* is not found on the Continent, since Grisebach founded his *elodes* not on a British but on a Continental specimen. Nor can I agree with the statement that the name *elodes* is in universal use in the sense of *ericetorum*. In the first place the description is poor; there is no reference, for instance, to the stem being hollow or solid. Reichenbach (*Ic. Fl. Germ.* xiii., t. 54, f. ii. and iii.) rescues it from oblivion, and figures two plants—one, Grisebach's own specimen, which has only unopened flowers, and therefore is indeterminable (the narrow, upright, unspotted leaves suggest an *incarnata* form, to which it is referred in *Index Kewensis*); the other, from Lapland, which does not represent Linton's *ericetorum*, since there is a cylindric spike of small purple, non-contiguous flowers. The figures of the details, however, suggest that, as a variant, it belongs to the *maculata* group. In Camus' *Iconographie des Orchidées d'Europe* it is represented by a white-flowered plant with unspotted leaves, the former having the mid lobe longer than the not large side lobes. Messrs Stephenson say, as regards *elodes*—"The description of Camus does not help much . . . . very few British plants would fall within such a description." Therefore it seems probable that Colonel Godfery has made a concept of true *maculata* (*ericetorum*) based on the poor description and contradictory figures of *elodes*, and there need be no surprise at his inability to match them in the European countries he has visited. I confess I cannot make the figure of *elodes* fit our British plants. Yet I have seen true *maculata* (*ericetorum*) plentifully in Belgium and in Western France. Recently M. Senay, of the Soc. Linnéenne de la Seine-Maritime, sent typical specimens which he gathered near Le Havre, and he says he has never seen *Fuchsii* there. I saw it also in Norway as far north as Trondheim, and it is plentiful about Upsala (teste Ahlberg), in Russia, and it is widely distributed in Denmark, where it is well represented in the Herbarium at Copenhagen, which, through Professor Ostenfeld's kindness, I had an opportunity of examining when I was in that city this year. There, as here, it is essentially the plant of acid soils. There are specimens from Lausanne and elsewhere from Switzerland in the National Herbaria, and it occurs in Northern Italy, Western Spain, and other parts of Europe. It was the only form found by me in Zetland. Its distribution is influenced by soil conditions, and it will be found chiefly where primitive rocks are near the surface or where much humic acid is present in the soil. In travelling in Britain from Cornwall northwards to Sutherland, on acid soils *maculata* would in the main be met with. In journeying from Dover to Durham through Essex, Herts, Bucks, Northants, and Yorks, *O. Fuchsii* would be the prevailing plant wherever basic soils appear.

As regards the universal use of *O. elodes* in a specific sense, I can find only a solitary instance, other than the author's. In eight or nine cases it is sunk to varietal or lower grade. It is not adopted by English authors, not even in Wilmott's edition of Babington. In Beck's Fl. Nied.-Oesterr. 205, 1890, it is treated as "*O. maculata* × *Gymnadenia odoratissima*." The vast majority of authors, including Schinz & Keller in their recently issued *Fl. der Schweiz* and Muller in his *Orchid-Arten*, ignore it.

Colonel Godfery maintains that *O. maculata* L. equals *O. Fuchsii*, and he makes some statements in support of this view. Let us examine them. He says, that "petala 3 exteriora erecta" characterise *O. Fuchsii*, not *maculata*. Has he overlooked the character given by Linnaeus of *maculata*, 8 lines, above "petalis dorsalibus patulis?" Messrs Stephenson say the direction of the sepals is less erect than in *Fuchsii*. As a matter of fact, in the herbarium the character is valueless, and in the field I think it will be found that the direction varies with the age of the flower. The tendency in both species as the flower matures is for the sepals to spread. It is insufficient for specific distinction.

The character, "lobis lateralibus majoribus," with or without the three last words, eliminates *Fuchsii*, and I reject any plant with large side lobes as my *Fuchsii*. The figures cited by Linnaeus from Vaillant *Paris.*, t. 31, f. 9 and 10, and that from Dodoens *Pemptades* 240 do not represent *O. Fuchsii*. The habitat, "in Europae pratis succulentis," suits *O. maculata* better than *O. Fuchsii* which prefers firmer ground and often sylvan situations. The specimen labelled *O. maculata* by Linnaeus in the Linnean Herbarium is not *Fuchsii*. Dr Moss, who independently worked at the subject, carefully examined it, and emphatically stated that it was true *maculata* which he said "equals *ericetorum*, and as you say, *praecox* Webster, and is well described in sensu stricto, by Linnaeus." Messrs Stephenson (*l.c.* 125, 1921) identify the herbarium specimen of Linnaeus with true *maculata*, *i.e.* not *Fuchsii*, and they say "it is in full agreement with the description," and they go on to write: "from this point of view Webster and Linton were in error in assuming that *Fuchsii* type was the true *maculata.*

But Colonel Godfery brings forward another statement—it can scarcely be held to be an argument—that because in 1921 *Orchis Fuchsii* was gathered in a marsh at Rella, in Oeland, where Linnaeus gathered "*O. palmata maculata,*" in 1741, that *O. Fuchsii* must be the Linnean *maculata.* In the first place there are no specimens known to exist of the Linnean gathering from Rella 180 years ago, so their identity is purely conjectural. Probably both species may be found there. But, even assuming that *O. Fuchsii* was seen there by Linnaeus it does not affect the case. The *maculata* of the *Species Plantarum* is not based on the Rella habitat, or on the Rella plant. He widens the place of growth to "pratis Europae succulentis." Colonel Godfery places too much stress on the Rella habitat. He gives the impression that in the second edition of the *Fl. Suecica* it is cited. That is not the case. Linnaeus says, "Habitat in pratis depressis, frequens," and true *maculata* is frequent in such situations in Sweden.

A point is made as to the meaning of the words, "intermedio angustissimo, integerrimo," which he holds Linnaeus meant "that it was very narrow in comparison with its length." This is a construction which can scarcely be maintained, nor does he make it clearer by misquoting the word "majoris," instead of "majoribus."

One may say that Linnaeus cities "It. Oeland," in *Fl. Suecica*, etc., but it is given as a reference, and he does not base his description on it. The plant before him when he drew up his description of *O. maculata* for the *Sp. Pl.* in 1753 is true *maculata* (not *Fuchsii*), the plates he cites for it are not *Fuchsii*, while his description clearly excludes *Fuchsii.* Can a clearer instance be given for the retention of a Linnean name as applied to a segregate? We may cite *Crataegus Oxyacantha* as an example bearing on this point. Linnaeus gives no named variety and alludes to no variation, yet he must have seen *monogyna* since most of his herbarium specimens belong to that species. The figures and synonyms he cites belong to *monogyna*, yet one word in the descriptive name induced most European botanists to restrict the Linnean *Oxyacantha* to the plant Thuillier called *oxyacanthoides*, the differentiating word being "subtrifidis"—the leaves being usually, but not invariably subtrifid, whereas in *monogyna* they are usually "subquinquifidis." This example bears upon the case of the restricted *maculata*, but in *maculata.* the synonyms, figures cited, and herbarium specimen all agree with the description, whereas in

Crataegus the synonyms, figures and herbarium specimen contradict it, yet, according to Swedish botanists, *C. Oxyacantha* = *oxyacanthoides*, not *monogyna*. *Quercus Robur* and *Epilobium hirsutum* are other examples which I need not labour here.

One other point remains to discuss. Colonel Godfery alludes to the name *O. maculata* L. being in universal use in the sense of *Fuchsii*. I am afraid this statement is due to a failure to understand what my *Fuchsii* is. In *Rep. B.E.C.* 101, 1914, I gave many instances where *O. maculata* was used in the proper sense (*i.e.*, *ericetorum*). But he cites one of these, *i.e.*, Rouy *Fl. Fr.* xiii., 53, 1917, as representing *Fuchsii*. Let us quote the description:—"Labelle faiblement 3-lobé [in *Fuchsii* it is deeply lobed] le lobe médian plus petit que les latéraux" [in *Fuchsii* the middle lobe is as large or nearly as large and longer than the lateral lobes]. Bouvier (*Flore des Alpes* 641) says—"Labelle à 3-lobes, les latéraux crénelés, plus larges que le moyen." Archangeli (*Fl. d'Italie* 659, 1882) says—"Labello trilobo a lobo medio ovato quasi acuto, i laterali larghi il doppio di esso." Merino (*Fl. Galicia* iii., 81, 1909) writes—"Mediano menor y por veces diminuto." The Abbé Coste gives a similar description, with which his figure agrees. Krocker (*Fl. Siles.* iii., 21, 1814) gives—"Labellum profunde trifidum, planum, lobis lateralibus, majoribus, crenatis, intermedio integro." Can any critical worker assert that these descriptions represent *O. Fuchsii*, which I characterise "labium tribus lobis altius indentatum, quae lobae ut subaequales sunt, ita media longior et aliquanto major quam laterales, et omnes integrae?" In what way does Boreau's (*Flore du Centre* 1857) vivid description, "épi serre cylindrace, conique . . . label à 3 lobes, les latéraux larges et crénelés, celui du milieu plus etroit entier," disagree.

To summarise:—Even if *O. maculata* L. included *O. Fuchsii*—of which there is no clear evidence—the description excludes it. The Linnean description, synonyms, figure, habitat, and herbarium specimen agree in showing it to be identical with *praecox* Webster, *ericetorum* Linton, and, possibly as a variant, *elodes* Griseb. Inferences drawn from plants gathered in the same locality in 1922 as being the one to which Linnaeus refers in his *Iter Oeland* in 1745 have no bearing on the case. He describes nothing apart from *maculata* in the *Sp. Pl.*; he gives no such restricted habitat as Rella, either there or in the *Fl. Suecica*. Suppositions respecting what must have been in the mind of Linnaeus, or as to what he may or may not have seen, being conjectural, are valueless in the face of what he has written in establishing the species in 1753. Even if he saw *Fuchsii* he may not have thought it worthy of specific distinction as in the cases of the Oak and Hawthorn. He must have seen both species, but he only describes one. This was the case so far as the Orchid goes in Britain up to 1866, when Syme, like Linnaeus, had only one species, but he, unlike Linnaeus, widened the description so as to cover both plants, which, he thought, were indefinable variants of one species. This is the attitude adopted by Lindman in his *Svensk Fanerogam Flora* of 1918. The direction of the sepals does not afford a differentiating specific character.

As bearing upon the distinctness of the two species, we may add that Mr T. A. Dymes has been making some very careful researches into the seed-characters. He finds no difficulty in separating those of *Fuchsii* from *maculata*. Those of *Fuchsii* are more delicately built, are much more pointed and curved at the apex, the testal cells are more sculptured, and there is a constant difference of thirty per cent. in size. Messrs Stephenson assert that they have seen both species growing together in a rich loamy clay with no peat (*Journ Bot.* 124, 1921), and Mr R. F. Burton removed *maculata* from the peat to a pot of ordinary soil, and it retained its characters unchanged. These observations go far to prove the distinctness which I claim for them ; but one wants to have seeds of *maculata* sown in calcareous soil and those of *Fuchsii* in peaty soil to see if under these conditions the plants come true from seed.

VARIOUS NOTES.

Society for the Promotion of Nature Reserves Handbook, 1923. From this it will be observed that Meathop Moss, Westmorland, and Wood Walton Fen, Huntingdonshire, have been acquired by the Society, which also has a tenancy of Swaddiwell Field, Northamptonshire, alluded to by John Clare in his poems as " Swordiwell." At one time a home of the Spider Orchid, alas it is no longer to be found there. The Society benefits under the will of the Hon. N. C. Rothschild to the extent of £5000.

The National Trust—Report for the Years 1922-3. During the year this Society has had the misfortune to lose by death its very able Chairman, The Earl of Plymouth, whose memoir appears in our *Report.* The Trust has been presented with 224 acres of downland in the Isle of Wight, known as Bornface Down, which has been most generously given by Mr Llewellyn Davis. Mr Macandrew, of Reigate, has acquired and given to the Trust Leith Hill Tower and Summit, which formed part of the estate of Mr John Evelyn of Wotton. The summit is 965 feet in altitude, the highest point in the south-east of England. The Tower was erected in 1766 by Mr Hull, and commands a view of thirteen counties, the sea itself being visible through Shoreham gap. Thirty acres of Midsummer Hill, Eastnor, have been given by the Rev. H. and Mrs Somers-Cocks, in memory of their son, a victim of the Great War. Scole Head, adjacent to Blakeney, consisting of about 1200 acres of delightful sand-dunes, has also been acquired. The area round Box Hill has been increased by the purchase by private subscription of about 250 acres. A real and permanent benefit to the nation accrues from the yearly working of this most excellent Society, and one hopes to see its membership still more largely increased in the near future. The Fell and Rock-Climbing Club of the English Lake District has presented about 3000 acres to the National Trust. It includes a large part of Scawfell and part of Great Gable, etc. Kinnoull Hill has been given by Lord Dewar to the City of Perth. Three acres on Dawes Hill Park, High Wycombe, with grottoes, waterfall, and woodland, has been given to that borough by the Marquis of Lincolnshire.

Early Paintings of Flowers. In the Cave dwellings, with their sometimes most vivid and artistic depiction of animals, there is almost an entire absence of floral paintings, nor are such to be found carved on bone as is so frequently the case with animals. Even on the B.C. Grecian coins the outline of a head may be quite realistic, whereas the Rose on the Rhodian coin is so conventional that its identity is rather guessed at than recognised. So, too, on the Vaphian Cups, while the bulls are magnificently shown, the trees, presumably olives, under which they are chased or netted, are but poorly detailed. It is therefore pleasing to gather from " The Times " that Sir Arthur Evans, in describing some of the paintings discovered at Knossos of about 1600 B.C., says that not only are the bright colours preserved, but there are excellent and natural depictions of many plants, among which the crocus and rose are conspicuous. Among plants painted in association of rocks of variegated hues are Madonna Lilies, Briar Roses, Ivy, *Pancratium maritimum*, Olive, Wild Pea, Vetches, and Labiate plants.

CURTIS' BOTANICAL MAGAZINE. Volume 148 has been published by the Royal Horticultural Society; 165 original drawings for this work, dating 1830-4, have been presented to Kew by Mr W. A. Bilney.

KEW GARDENS have received many rare living plants which were left by Mr H. J. Elwes.

EPIPOGON EPIPOGIUM (L.) comb. nov. in *Gard. Chron.*, August 1924. *Satyrium Epipogium* L. *Epipogon aphyllum* Sw. This very rare species was first found in Britain in a footpath at the bottom of a very steep bank, close to the Sefey [Sapoy] brook, at Tedstone Delamere, near Bromyard, Herefordshire. The banks are clothed with oaks, surrounded by ferns and briars, and are very shady. No other specimen had been found up to the tenth of August. Mr H. C. Watson named and returned the specimen to Mr W. R. Crotch (see *Phyt.* 118, 1855), who adds that Mr Lees is reported to have presented a specimen to the Linnean Society. This appears to have been lost, and I am also unable to trace the whereabouts of Mr Crotch's specimen. Babington (*Man.* 406, 1904) says it was only once found at Tedstone Delamere. In 1876 Miss Lloyd found a specimen in a wood near Ludlow in Shropshire. This was painted by Miss Lewis and the painting submitted to Prof. Babington. The specimen was carelessly thrown away by a servant. In 1878 it was again found in the same wood, and this specimen, I believe, is in Babington's herbarium at Cambridge. For some years nothing more was heard of it, but on September 2, 1892, I visited Ludlow in order to search for it, when Miss Lloyd took me to the locality in Ringwood Chase, which was a trench into which, or rather on the banks of which, leaf-débris had been put from the trench. On this humus material Miss Lloyd first found it. No trace of it was then visible. A prolonged and arduous search on that and the following day was made, when in quite a different part of the wood, and well within the Salopian Border, under the dense shade of oaks, a solitary small specimen was found, which I have recently given to the Herbarium of the British Museum at South Kensington. Although many botanists have since repeatedly searched the wood no other example has been found, and during the war the part where the plant grew was cleared of trees. I am informed by Mr Towndrow that a specimen was found near Ross, Herefordshire, in 1910. This year, when in Jersey, Dr H. Smith kindly sent me a painting which had been made by Miss Baumgartner from one of two small specimens which had been gathered by a girl in an Oxfordshire wood last June. Mr Marcham had correctly identified it as *Epipogon*. I at once corroborated the name, and hurried back in order to visit the place. After two days' search I was rewarded by finding a specimen in flower, but going over, and what was possibly the dried remains of a second plant. I may add that the two specimens which were first found were not preserved, so that, as far as I know, there are not more than four British examples of this rare and curious British species in existence. The exact locality of this latest and most interesting addition to the Oxfordshire flora is naturally withheld, but I may say it grew in shade among dead leaves. It may be added that the plate in *English Botany* is drawn from a foreign specimen. —G. CLARIDGE DRUCE.

AJUGA REPTENS L., var. STOLONIFLORA Bogenh. Fl. Jena, 316. Described by the author as a beautiful plant with numerous stout scions all flowering. British plants to be referred to this variety have been gathered at Ockham Common, Surrey (25th May 1907; C.E.B.), and at Polohu Valley, Cornwall (4-5-1899, A. O. Hume in Herb. S. Lond. Bot. Inst.). The description of this variety by Rouy (Fl. Fr. xi., 228) very aptly characterises the British plants—the season's stolons each terminating in a spike of flowers, paler and less numerous than those of the primary stem. Other varieties of *Ajuga reptans* probably awaiting recognition as British forms are (1) var. *sylvestris* Bogenh. Fl. Jena, 315, " stem and inflorescence shaggy, the upper bracts entire, blue, twice as long as the whorls. Root-leaves very large, crenately toothed, obovate, the upper leaves with scattered hairs." Surrey plants collected by A. O. Hume near Burford Bridge are very probably this: (2) var. *typica* Beck Fl. Nied.-Oester. 1024, " lower leaves obovate. Lower bracts broad oval or roundish, the upper gradually decreasing in size, obtuse, shorter than the flowers." (3) var. *longifrons* Beck. *ibid.* "Basal leaves often narrower, more oblong than in the preceding var. Lower bracts oblong often distinctly crenate-serrate; the upper oblong-lanceolate much narrower, many times longer than broad, often acute, as long as or exceeding the flowers."—C. E. BRITTON.

PERSONAL NOTES.

MRS ISABEL ADAMS, F.L.S., 14 Vernon Road, Edgbaston, Birmingham, is painting British Aquatic Plants. Would members assist her by sending specimens?

MRS PERRIN, 23 Holland Villas Road, London, W. 14, is continuing her beautiful paintings of British plants. Members willing to assist in collecting specimens are asked to write to the above address.

MRS O'CALLAGHAN, Hangmoor, Virginia Water, Surrey, is painting British Plants, and will be glad to receive local specimens in flower. She will gladly defray the cost of the transmission.

MR T. A. DYMES, F.L.S., Carthona, West Drayton, Middlesex, wants ripe capsules of British orchids.

MR F. J. HANBURY, F.L.S., Brockhurst, East Grinstead, is anxious to have seeds of rare British plants. He will defray expenses.

MR W. NORWOOD CHEESMAN, The Crescent, Selby, York, wishes to exchange specimens of *Mycetozoa*.

MR A. E. WADE, Botanical Department, University of Cardiff, is preparing a Flora of Monmouthshire, and would be glad of assistance.

MR W. H. PEARSALL has removed from Dalton to Elf Hall, Lady Hall, Broughton-in-Furness.

MR JOHN CRYER, our valued member, whose assistance to the Club as a Hieracia expert has been very great, is completing 50 years of educational work in Yorkshire. As long ago as 1897 he headed the poll at the School Board election by a majority of over 5000. We wish him long life and strength to continue his very useful botanical work in Yorkshire, a county in which he is so much respected.

WANTED to purchase for an Institution, a Herbarium of British Plants containing good series of the critical genera and varieties given in the London Catalogue. Apply to the Secretary, 9 Crick Road, Oxford.

WALLACE, ALFRED RUSSELL. A memorial portrait to this distinguished naturalist was presented to the Trustees of the Natural History Museum. Sir Charles S. Sherrington, the President of the Royal Society, unveiled the portrait, which was accepted on the part of the Trustees by the Archbishop of Canterbury. It is placed near the statue of his great fellow-worker, Charles Darwin.

GODMAN, FREDERICK DU CANE, AND SLAVIN, OSBERT. A mural tablet to these great naturalists was unveiled by Lord Rothschild on July 28 at the Natural History Museum, and was accepted on the part of the Trustees by the Archbishop of Canterbury. In 1909 a fund was raised to place a memorial, and the balance was to be used as a nucleus of an Exploration Fund. To this Dame Alice and the Misses Godman generously contributed a sum of £5000. It may be recalled to mind that we owe the monumental work on the *Biologia Centrali-Americana* to the distinguished scientists whose names are on the memorial tablet. Mr Godman's enormous and valuable collection of birds and butterflies was given to the Natural History Museum, and there the tablet to his memory is placed adjacent to the Darwin statue.

CORRECTIONS AND ADDITIONS, 1920 & 1922 REPORTS.

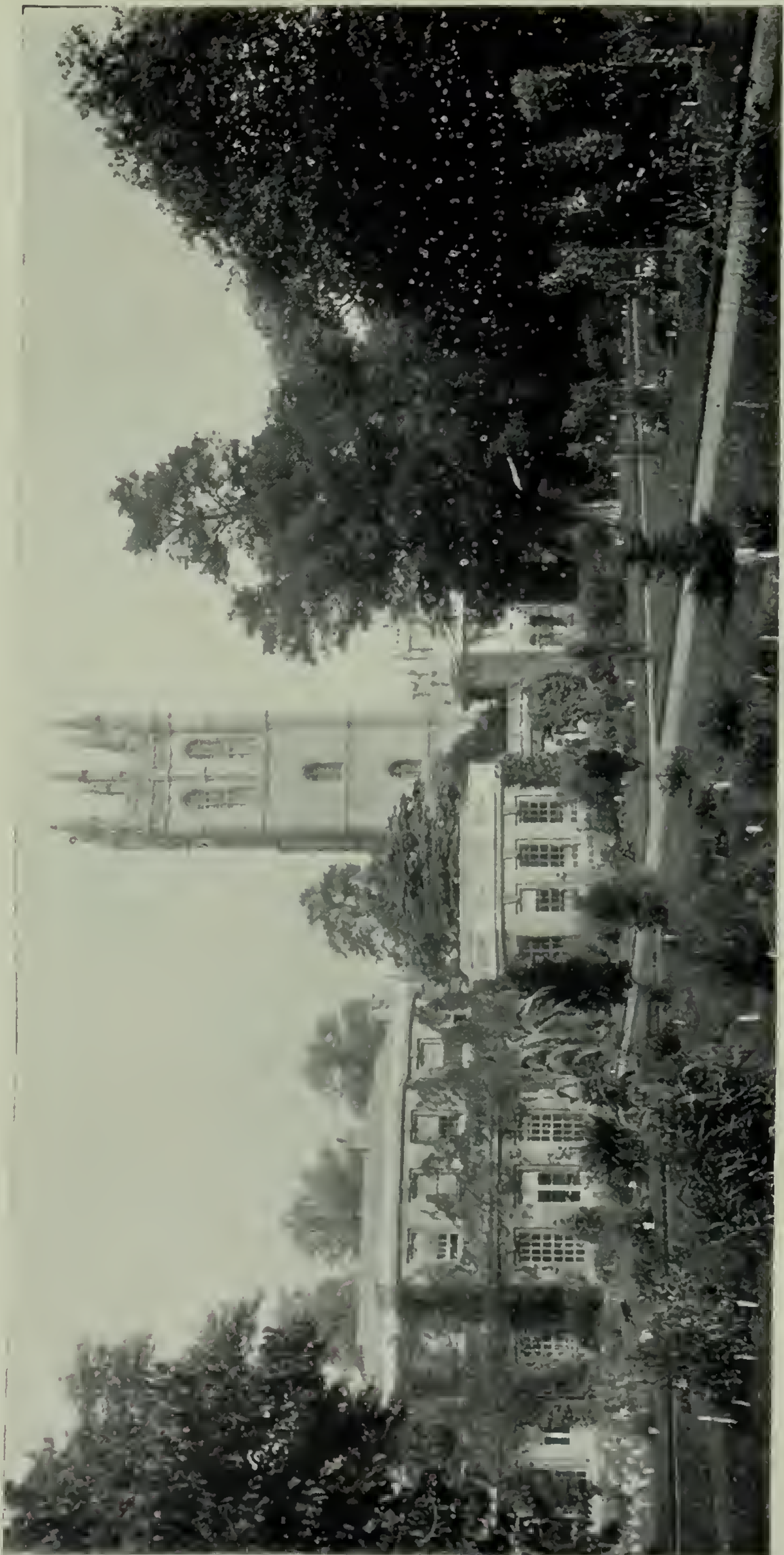
Report 1920.

p. 237. Lines 12 and 13. For " of Pierowall discovered Primula, foliis " read " to Pierowall discovered a Primula foliis."

Report 1922.

p. 604. Line 27. For " Mr F. J. Wall " read " Mr T. J Wall."

p. 614. Line 1. For " Cumberland " read " Westmorland."
Line 16. For " comb. nov." read " Fritsch."
p. 618. Line 34. For " Discovered " read " Recorded."
p. 621. Line 28. For " Phellack " read " Phillack."
Line 29. For " mule " read " military."
Line 32. Delete " mule-."
p. 657. Lines 13 and 17. For " Thompson " read " Thomson."
p. 698. Line 19. For " Wortling " read " Worthing."
Line 25. For " Paharanpur " read " Saharanpur."
p. 699. Line 6. For " examiner " read " lecturer."
p. 716. Line 4. For " Buxton, Derby " read " Buckton, E. Yorks."
p. 717. Line 3. For " *gracilis* " read " *elegans*."
p. 719. Line 18. For " E. Sussex " read " Surrey.'
p. 728. Line 16. For " Devon " read " St Austell, Cornwall."
p. 729. Line 11. For " Corbridge-on-Tyne " read " Lintley."
p. 733. Line 24. Delete " the Hill of."
p. 738. Line 20. For " *latifolium* " read " *pesudo-latifolium*."
p. 739. Line 25. For " J. S. WALL " read " T. J. WALL."
p. 740. Lines 4, 5, and 28. For " J. E. WALL " read " T. J. WALL."
p. 747. Line 1. Mr Arthur Bennett says the locality is in East Sutherland.
Line 28. For " fern " read " form."
p. 749. Line 28. Insert " Boynton, E. Yorks."
p. 755. Line 19. For " Langarnay " read " Langamay."
p. 761. Line 2. Insert at end " or Padua."
p. 774. Line 33. For " Durness " read " Deerness."
p. 810. Line 36. For " 300 " read " 800."
p. 829. Line 25. Insert " Alien here."
p. 850. Line 27. For " July " read " August."
p. 851. Line 19. Insert " One may add that *Rhinanthus monticola* Sterneck was founded on a specimen from The Black Isle which G. C. Druce sent him."



OXFORD BOTANIC GARDEN, LIBRARY AND HERBARIUM.

SUPPLEMENT TO REPORT OF BOTANICAL SOCIETY AND EXCHANGE CLUB FOR 1923.

THE FOUNDATION OF THE OXFORD BOTANIC GARDEN AND ITS TERCENTENARY

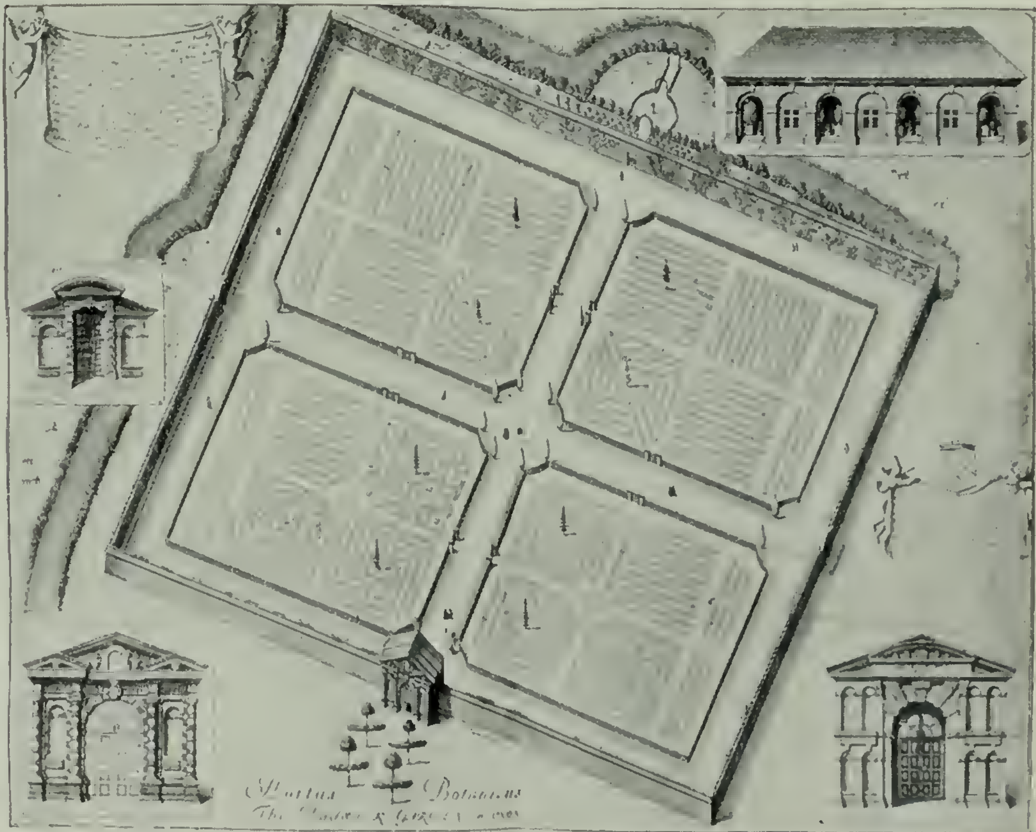
BY

G. CLARIDGE DRUCE, M.A., LL.D.

The year witnessed the somewhat belated Celebration of the Tercentenary of the foundation of the Botanic Garden at Oxford. which was celebrated in the Garden on the 23rd June. The Most Honble. the Marquess Curzon, K.G., Chancellor of the University, presided, and addresses were given by him, the Sherardian Professor, Sir F. Keeble, K.B.E., F.R.S., Prof. A. E. Seward, and others. Sir David Prain gave an account of the history of the gardens, which has been published in the *Gardeners' Chronicle.*

The Garden is the oldest in Britain, and has a beauty of its own, enclosed as it is with Danby's stately walls and its fine stone entrance designed by Inigo Jones. Although much has been said about the Professors of Botany who have been connected with it, this seems a not unfitting opportunity to say something about its illustrious founder, his romantic history, and his somewhat striking lineage.

A word or two may be given to sketch in the briefest manner the reason which led to the establishment of Physic Gardens. Peering back into the dim ages of our world one can realise that man, when he entered the scene, must have lived upon the fruits of the earth or upon the animal life he could capture. Later on he domesticated the dog, the sheep, the ox, and the horse. He moved about in a nomadic existence, a tender of herds and flocks. A great advance in civilisation took place when someone more gifted than his fellows was able to produce an edible starchy grain from some native species of grass for his sustenance. This necessitated a cessation of nomadic habits. It fixed him to the area of his corn cultivation, and thus grew up the homestead and all that a settlement on the soil meant. The nomadic herdsman is typified by Abel, the tiller of the soil by Cain, and for ages—even yet it persists—the older, the more aristocratic segregate, the owner of flocks and herds, looked with contempt upon the stay-at-home whose tillage linked him with the soil. In addition to the chieftain who ruled over either section there grew up a man who acted both as a priest and a physician, one who held the power of healing or killing, one who could predict the recovery to health or the death of his patient, and who could assuredly aid his predictions, especially in the latter case. This goes on to-day in what are called the dark places of the earth. As civilisation progressed, the union of the priest and physician in one person became severed. The doctor, who from earliest times was acquainted with the properties of the plants or minerals he used doubtless cultivated those plants which were difficult of access, and stored his ores of lead, mercury, or copper, just as the finder of fire in some distant volcanic area kept it alight near his abode, and by having such a potent agent near at hand increased his prestige and power. Plants were grown for beauty as well as use in the gardens of Semiramis at Babylon, in those of Egypt, Crete and Greece. We have evidence that Theophrastus, who lived four hundred years before Christ, was well acquainted with medicinal plants and their uses. He was a skilled horticulturist, was cognisant of the caprification of figs, and was acquainted with the process of grafting. He was the founder of ecology, as he considered plants in association with their environment. He named plants after individuals who had used them—*Achillea* after Achilles, who is said to be the first who knew that it healed wounds, and *Paeonia* after Paeon, who cured the wounds which the gods received during the Trojan war. It is extremely probable that Theophrastus rescued from oblivion much of his master's knowledge, and handed on the learning which had so freely been given to him by Aristotle. Dioscorides, who lived about the beginning of the Christian era, was a celebrated physician, who focussed preceding knowledge and enumerated about 500 species of plants. Of these brush-drawings were made by the


Hortus Botanicus

LOGGAN'S PLAN OF THE OXFORD PHYSICK GARDEN IN 1675.

order of Anicia Juliana in the fifth century. The originals of these drawings exist at Vienna, and the Empress Maria Theresa in the latter part of the eighteenth century had copper plate engravings made, of which only four copies are known to exist, two at Vienna, one at Oxford, and a very incomplete example, which probably belonged to Linnaeus, at the Linnean Society's rooms in London. A facsimile copy of the drawings has been issued in colour. Old as is the history of botany, or rather medical botany, in Europe, doubtless the knowledge was derived from an older source, Egyptian in part. It is interesting to recall that 23 centuries before Christ the knowledge of weaving and the necessary cultivation of the flax plant were well known. It is not likely that the demulcent and oily quality of the seeds escaped attention. Indeed, the Flax was cultivated in Europe in Neolithic times, and as a variety which has happily been named *Linum precursor*. We know that early in Egyptian history the Lotos, Indian *Nelumbium*, was introduced by one of its rulers from the valley of the Euphrates or Tigris, and that in B.C. 17, thirty-one incense trees (*Olibanum*) were brought from Arabia, together with cassia and gum acacia. Seventeen hundred years before the Magi made their offerings Frankincense was depicted on Egyptian walls. The transplantation of the trees was deemed astonishing since the narrator says, "Never has anything been seen like it since the foundation of the world." Older still perhaps was the botanical knowlege of the Chinese. They were aware in 1200 B.C. that hemp consisted of two different kinds, male and female. The father of Chinese Botany was the Emperor, Chen-nung, who lived about 2700 B.C. He was not only the ruler, but a doctor, botanist, and agriculturist. An early Botanic garden was established after the capture of Yunnan, about 100 B.C., and to this one hundred Areca Palms were transplanted to afford the nuts for chewing Betel. This had been in use centuries before, as is evidenced by the references to the practice in the ancient literature of the Hindus. The Moors, whose commerce extended from Madeira to China, were well conversant with horticulture, and brought in the eleventh century, among other things, to Xatava in Spain, the knowledge of paper-making which they had extorted from prisoners they took at Samarcand in 751. At Salerno, in Italy, a Botanical garden was founded in 1317 by Matthaeus Silvaticus in connection with the celebrated medical school, and there was another at Venice in 1333, which was due to Gualterius. The discovery of America gave an important stimulus to the study of growing plants. We know that Maize was grown in Seville about 1500, but not only was that corn, which is of almost unimaginable antiquity, brought to Europe, but also the valuable Potato, the Tobacco, the Prickly Pear, and the Tomato, these nurslings of another sky. This led to the desire to found gardens in which they might be cultivated and their properties studied. It is extraordinary how quickly these strangers found a place in cultivation. We know that Maize and Prickly Pear are in the Herbarium of Cibo gathered before the year 1533 and that Rauwolf saw the Maize growing at Birra in the Valley of the Euphrates in the year 1574.

As purely Physic Gardens, Padua and Pisa are the oldest in Europe. The former was established in 1543 (?) by Anguillaria*, while Pisa owed its origin in 1544 to Luca Ghini who was probably the first botanist to form a Herbarium. Among his many pupils five formed the oldest herbaria of which we have knowledge. Three of these exist to-day that of Cibo at Rome, of Aldrovandi at Bologna, and Cesalpini at Florence. Of Ghini's five pupils two, John Falconer and William Turner, were Englishmen, but their collections are lost. Turner was the father of English Botany and the author of "The Names of Herbes" and "The Herball." Aldrovandi founded the garden at Bologna in 1568, and bequeathed it to the city. In a splendid room in the University Library I had the pleasure of seeing his collection of plants dating from 1553, his MSS. his published works and his wood-blocks. (There is an extremely interesting biography of him by Giovanni Fantuzzi). His example was followed in Holland, that home of gardeners, by Cluyt, who founded a garden at Leyden in 1577. Leipzig had one in 1580, Koenigsberg in 1581, and Breslau in 1587. France lagged a little behind but Richier de Belleval initiated one in Montpellier, the University of Rabelais, in 1597. As yet Paris had not followed the fashion. It was reserved for an Englishman, Henry Danvers, Baron Danby, then living at Cornbury Park, Oxfordshire, to remove the reproach which might rest on England by giving to the University of Oxford in 1621, a not unworthy garden for that great and ancient University. "In Usum Acad. et Reipub." is carved upon the gateway.

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* An account of this by Jac. Antonio Cortuso appeared in 1591, giving plans of the gardens, a portrait of the author, and a list of plants in Italian. The garden was a fine example of the formal geometrical style.

HISTORY OF THE DANVERS FAMILY.

Before the Norman Conquest there was in Normandy near Coutances a village named D'Aluers, the squire of which, Roland D'Aluers, joined the banner of Lord of St Lô, who was the Bishop of Coutances, at the battle of Senlac when Harold was overthrown. Then England was piteously overrun, and although the Conqueror never reached Oxford we know how greatly that city suffered from the aftermath of the war and how the English nobles were despoiled of their possessions. As a reward for his loyalty and bravery Roland D'Aluers was granted "sundry lands and livings in the county of Bucks, Oxon and Berks whereof the greater part had been ye inheritance of Lewyn, an English Earle before ye Conquest." He was also given the honor of Wallingford, and it was at this town that Wigod, the holder of the manor received William and there the Conqueror had homage paid him by Wigod and Stigand, Archbishop of Canterbury." Wigod's daughter and heiress was married to the Conqueror's favourite noble, Robert de Oilli, a name still connected with the D'Oyley tower at Oxford. Roland had three sons who lived in Oxon, Northants and Bucks. Tetsworth came into their hands. This village is situated on the London road and is named after a Saxon invader from Jutland named Teot who, seeing good pasturage and a never failing spring called the Knapp, built his home hard by, which became the homestead of Teot and gave its name to the Manor which fell into the possession of D'Aluers, whose name in course of time became changed to De Auvers, and then to Danvers. Here, as is to be learned from the Cartulary of Thame Abbey, which is preserved in the library of the Marquis of Bath, at Longleat, they intermarried with the local families of Tollemaches, whose name survives in Stoke Talmage, with the Chevauschesuls from whom the village of Chiselhampton takes its name and with the D'Oyleys who were connected with Oxford. (The last Baronet, Sir William D'Oyly, lived about a century and a half ago in a cottage adjacent to a public house in Westcott Barton, a small village in North Oxfordshire). The eldest son, Sir Ralph, lived at Little Marlow in Bucks and is said to have married the sister of Alexander the Magnificent, Bishop of Lincoln. The Danvers made judicious marriages and became great landowners especially near Banbury. Among these matrimonial alliances were marriages with the Fettiplaces of Swinbrook and Shefford, "the Greens and the Fettiplaces hold all the manors the parks and the chases"—(the last male Fettiplace died as the keeper of a small inn at Burford)—with the Greys of Rotherfield, with the Fiennes of Broughton Castle, the Quarrermaines of Thame, the Verneys of Byfield and the Bruleys of Waterstock. Eventually Sir John Danby, who was born in 1540, a notable person owing to the zeal he displayed in the land-defence against the Spanish Armada, succeeded to the estates of Silvester Danvers at Dauntsey in Wiltshire. He made a great marriage with Elizabeth Nevill, the heiress of the last Lord Latimer, through whom he obtained the estates and Castle of Danby in Yorkshire. He had three sons and seven daughters, six of whom survived him. The three sons were all educated at Oxford. Charles, the eldest, matriculated at Christ Church when he was 16, and at 18 he was fighting in France. He then became member for Cirencester. In 1598 he was on terms of enmity with Henry Long, brother of Sir Walter Long of South Wrasall, who had grossly insulted him. His younger brother, Henry, coming into the inn at Corsham when they were quarrelling, and thinking his brother was in danger of his life drew his pistol and shot and killed Long. The brothers had to flee and they owed their escape to Henry Wriothesley, Lord Southampton, the patron of Shakespeare. They fought in France under Henri Quatre, who was so pleased with their prowess that he wrote a letter to Elizabeth asking for their pardon. This was granted in 1598 and in the next year Charles was given a command as Colonel and fought in Ireland under the Earl of Essex with whom he was on terms of great friendship. This led him to become implicated in the Essex rebellion and he paid for his friendship by expiating his treason on the scaffold on Tower Hill on March 18, 1601. His large property was forfeited to the crown, but two years later it was handed over to his second brother Henry, who was the seventeenth in descent from Sir Roland D'Aluers. Henry, the Founder of the Garden, was born at Dauntsey on June 28, 1573. He also matriculated at Christ hurch when he was 16, became page to Sir Philip

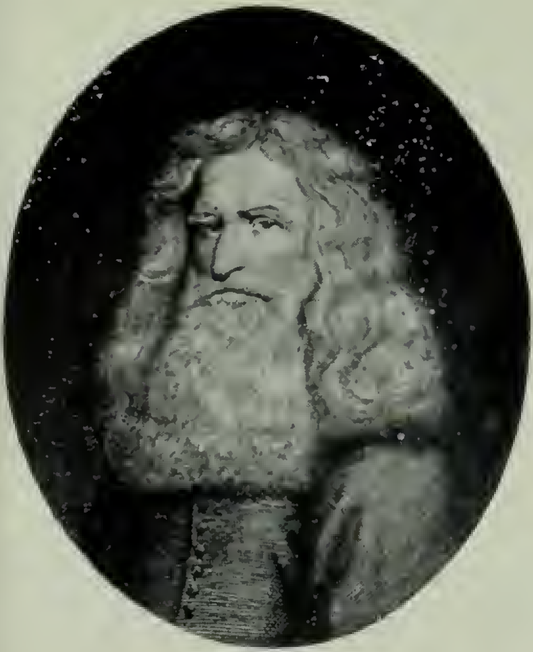
Sidney and served under Maurice Count of Nassau, afterwards Prince of Orange. Then he fought under Henri Quatre, and was knighted at Rouen when 18 by Robert Devereux, Earl of Essex. After his exile, when pardoned, he was made a captain of a vessel and proved so capable that the Lord High Admiral, the Earl of Nottingham, said he was the best captain of the Fleet then fighting on the Spanish coast. He served under Essex in Ireland where he became Lieutenant-Colonel of the Horse, and received a shot in his face at the battle of Kinsale. For his valour he was created Baron Danvers of Dauntsey by James the First in 1603. After the accession of Charles the First he was created in 1626 Earl of Danby, sworn a Privy Councillor in 1628, and made Knight of the Garter in 1633. "The ceremonial attaching to that knighthood was the grandest solemnity known in the memory of man." He was made Governor of Guernsey in 1665, Ranger of Wychwood Forest and Keeper of Cornbury Park to which place he "retired, full of honour, woundes and daies." There he kept a house of great and costly hospitality and added to the portion where Robert Dudley, Earl of Leicester, died in 1588, a fine south-western wing designed by Nicolas Stone.

Henry was the illustrious Founder of the Oxford garden. In 1620 he determined to found the Physic Garden and therefore purchased the lease of a pasture ground on the south-west side of the London road called Paris Mead, once the burial place of the Jews before their expulsion in 1290, and subsequently of the hospitallers of St. John, prior to the acquisition of that Hospital by William Waynflete for the erection of Magdalen College. "Four thousand loads of mucke and dunge had to be carted by H. Windsor, the City Scavenger, to raise the ground above flood-level." We are told that on July 25, 1621, the Vice-Chancellor, the Proctors and most of the University solemnised the laying of the first stone of the Physic Garden. Mr Dawson of Broadgates made a speech and then Dr Clayton and last of all the Vice-Chancellor. Lord Danby completed the levelling of the ground and enclosed it with stately walls which at that time cost £5000, the chief gateway being from the design of Inigo Jones but executed by Nicolas Stone, the architect for the additions to Cornbury, of St Mary's Porch, of the tomb of Sir Thomas Bedley, and the beautiful effigy of Lady Elizabeth Carey in Stow Church in Northamptonshire. It may be added that the statue in the upper niche of the garden gateway is of Lord Danby and the statues in the lower niches of Charles the First and Second were paid for by the proceeds of a fine of one hundred pounds inflicted on Antony Wood for libelling Lord Clarendon the author of *The History of the Rebellion.* The gateway was not completed till 1632. Elizabeth, Lord Danby's mother, who had for second husband Sir Edward Carey, was a clever woman—"she has Chaucer at her fingers' ends. A great politician, great witt and spirit, but revengeful." Henry inherited her ability. Aubrey says of him that "he was a perfect master of the French; a historian; tall and spare; temperate; a great economist so that all his servants were sober and wise in their respective stations." They included Colonel Legge and his brother. This Colonel Legge was a godson of Lord Danby who sent him as a volunteer to fight for Gustavus Adolphus and afterwards to help Prince Maurice of Orange in the Low Countries. In later days he became a most devoted servant to the Stuart cause. He was captured after the battle of Worcester, where he was wounded, and was imprisoned in Coventry gaol. He would have been executed had not his wife arranged an escape by visiting him, when he went out dressed in her clothes. Of this episode there is a vivid MS. account which I have had the pleasure of seeing in the muniment room at Patshull. His son was the first Earl of Dartmouth. Lord Danby died at Cornbury Park on January 20, 1644. He was buried at Dauntsey Church in Wiltshire. On his monument are some lines written by his nephew, the saintly George Herbert. Lord Danby left Cornbury Park to his sister, the wife of Sir Richard Gargrave, who, from such a condition of affluence that he could ride on his own land from Wakefield to Doncaster, became so impoverished that he was obliged to earn his bread by travelling with pack-horses. He died in an old hostelry with his head on a pack-saddle. Danby also left for the upkeep of the Botanic Garden the parsonage impropriate of Kirkdale in Yorkshire and also "some trees which are lying at Wilcott as Tymber to perfect such buildings as shall be ordained at Oxford for the benefit of my Physic garden." William Lenthall, the Speaker of the House of Commons, then living at Burford Priory, was left as one of the overseers of his will, but on Lenthall's being made Master of the Rolls he added a codicil substituting Sir

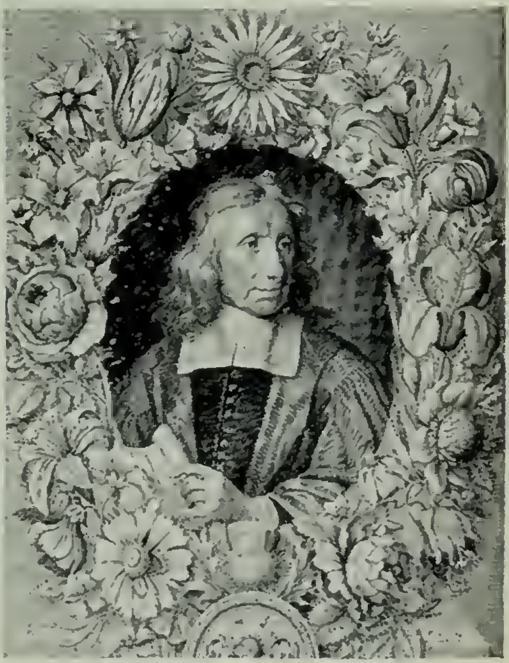
Edward Hide in his place. The troublous conditions of the times prevented the University benefiting by the will, which was contested by Danby's brother, Sir John Danvers, of whom a few words must be said. He, too, came as a lad of sixteen to Brasenose College, Oxford. He was knighted at Royston in 1608-9, and shortly after, when about 25, married Magdalen Lady Newport, then twelve years the widow of Sir Richard Herbert, of Montgomery Castle, who had ten children living at her second marriage. Sir John became Member of Parliament for Arundel, sat for Montgomery in 1614 and for the University of Oxford in 1621-2, just after his brother had given the Physic garden. He was a man of considerable learning, and very fond of gardening. So singularly handsome was he that people on the Continent followed him about to admire his fair complexion and flaxen hair. His mansion at Chelsea was a treasure-house of marbles, and here he held a "salon," to which many were attracted by the ability and wit of his charming wife. In the Commons John Danby went over to the Parliamentary Party, was one of those who tried the King, and signed his death-warrant, his face being one of the two whom Charles recognised. On the death of his wife in 1627, he married, the next year, Elisabeth Dauntsey, by whom he became possessed of the Manor of West Lavington in Wiltshire. By her he had three sons and three daughters. His eldest son, Henry, was made the heir of the greater part of Lord Danby's estate, notwithstanding which John tried to oust his sisters from the bequests left them by Lord Danby, and succeeded so far as Cornbury Park was concerned. However, Henry, the son of Sir John, died of smallpox when only 21, before his father's decease, as did his two brothers. So far as he could, Henry left his estates to his sister, Anne, who married Sir Henry Lee, of Ditchley and Quarrendon, and her only surviving daughter married James Bertie, Baron Norreys of Rycote, the ancestor of the Earls of Abingdon. Sir John Danby lost favour with the Commonwealth, left England, and lived on the continent for some years. On his return he lived at Danby House, Chelsea. He married a third time, and by his wife, Grace Hewett, he had a son, John, who became his heir according to his will of 1654. It is said that he felt he ought to carry out the wishes of his brother to endow the Oxford Physic Garden, and that he had actually prepared a codicil for this purpose, but it was never signed owing to his somewhat sudden death in April 1655. So Oxford again suffered.

JACOB BOBART.

Before the death of the Earl of Danby, Jacob Bobart, a native of Brunwick, had been appointed gardener at the Physic Garden at a salary of forty pounds a year. This deed is dated 1641, but it is probable that Bobart had been at the garden sometimes since he is spoken of as ' of Oxford.' Bobart was, says Baskerville (*Collectanea* p. 190), in his younger days. . . . sometime a soldier by which Imploy and Travail he had opportunities of Augmenting his knowledge, for to his native Dutche added the English Language and he did understand Latin pretty well. As to fabric of body he was by nature very well built (his son in respect of him but a shrimp) tall, straite and strong, with square shoulders and a head well set upon him. In his latter day he delighted to weare a long beard and once against Whitsontide had a fancy to tagg it with silver, which drew much company in the Physic Garden." He was an excellent gardener and Baskerville says " After ye walls & gates of this famous garden were built, old Jacob Bobart may be said to be ye man that first gave life and beauty to this famous place, who by his care & industry replenished the walls with all manner of good fruits our clime would ripen & bedeck the earth with great varietie of trees and plants & exotick flowers, dayly augmented by the Botanists who bring them hither from ye remote Quarters of the world. At the entrance he set two yew trees which being formed by his skill are now grown up to gigantic bulky fellows, one holding a Bill, th'other a Club on his shoulder." These examples of topiary work formed the theme of many ballads and jests. Evelyn came to see the Garden in 1654, where Bobart showed him " the sensitive plant, canes, olive-trees, rhubarb," etc. In 1648 a Catalogue of the Plants growing in the garden was published. This affords striking testimony to Bobart's capabilities for no fewer than 1600 are enumerated. A second edition appeared in 1658. It was a joint compilation of Dr Philip Stephens, Principal of Hart Hall, now Hertford College, William Browne, afterward Senior Fellow of Magdalen College, and by the Bobarts, father and son. It has a quaint preface. The



JACOB BOBART.



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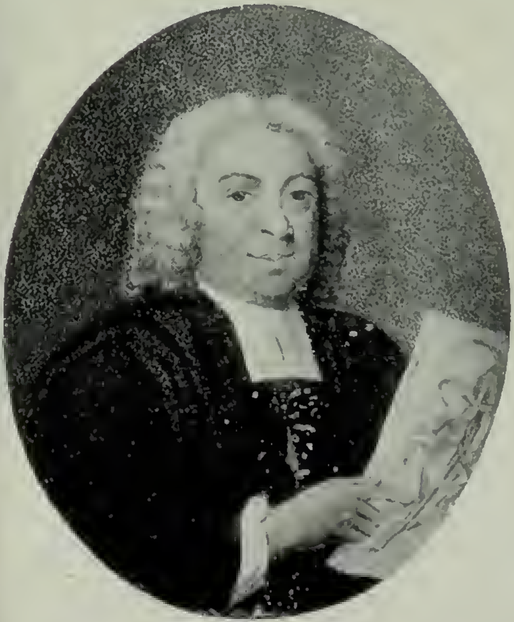

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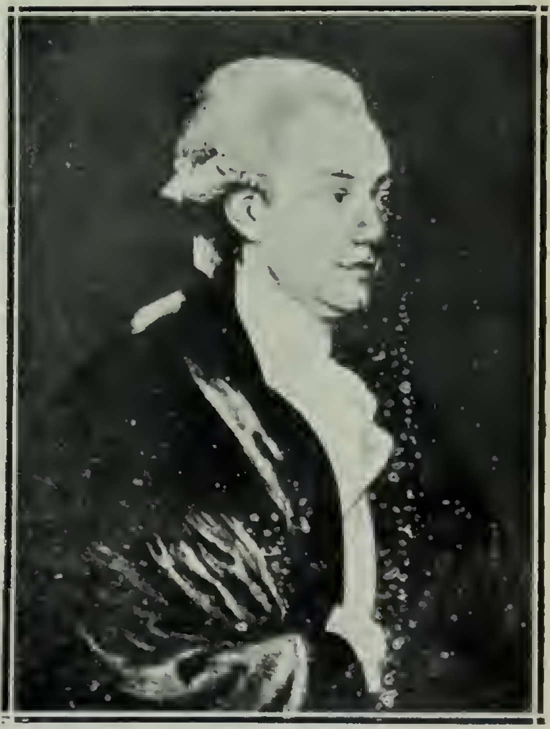


SIBTHORP.

names of the plants are accompanied by references to the pagination of the authors cited, the first time in a British Botanical work. A very few plants have the localities mentioned. Evelyn came again in 1664 (*Memoirs* I, 352) when he saw two large locust trees and many planes, and some rare plants under the culture of old Bobart. Samuel Pepys paid it a visit in 1668, and to it also came Cosmo de Medici in May 1669, when Bobart is described as an elderly man of a fine countenance and a perfect botanist. The plants of the greatest rarity were shown to the serene prince. In the same year, Elias Ashmole and Antony Wood were often in the garden with Bobart, " who showed them many choice plants, grafts, herbs, and other curiosities to Mr Ashmole's great delight." Ashmole had only recently been initiated into the art of simpling by John Watlington, an apothecary of Reading, and on one of these visits Ashmole explored the rich country round Stow Wood. In 1670 the Prince of Orange came when "Bobart received him with a Dutch compliment." (Wood' *Life and Times*, II., 208). Bobart died in the garden house at Oxford on February 4, 1679, in the 81st year of his age. There is a tablet to his memory, which Dr Vines has recently restored, on the south wall of St Peter's Church.

ROBERT MORISON.

Owing to the disturbed period a Professor of Botany was not appointed until December 6, 1669, when Dr Robert Morison was elected. Next day he was made Docter of Physic. From the MS. draft of his *Vita* (Sloane MS. 3198, ff. 17-29), which is in the hands of Archibald Pitcairne, we learn that Morison was born at Aberdeen in 1620, and entered that University at so early an age that he graduated in Latin, Greek and Philosophy, taking the degree of Master of Arts in 1638. He also studied Mathematics and turned his attention to Natural History, especially Botany, with the idea of becoming a Physician. His parents wished him to study Theology, so in order to meet their wishes he took up Hebrew with so much success as to be able to write a grammar in that tongue. But he kept to his first love. Then came on the Civil War, and under Montrose, in the battle of the Brig of Dee, 1644, against the Covenanters, he was severely wounded. He subsequently fled to France where he studied medicine and its allied sciences in Paris, and was created Doctor at Angers in 1648. Vespasian Robin (after whom *Robinia* is named) was his Botanical teacher, and Robin recommended him to Gaston, Duke of Orleans (uncle of Charles the Second), who gave him the management of the Royal Garden at Blois. At that magnificent castle Morison evolved his system of classification which was to have been published under the ægis of the Duke of Orleans. The Duke, unfortunately, died in 1660, but he was previously in that year visited by Charles. to whom the Duke introduced Morison. The result was that after the Restoration, Morison was invited to come to England. Despite the pressure made by Fouquet, the Minister of Finance, to induce Morison to remain in France he hastened to London where he received the title of King's Physician and Professor of Botany, with a stipend of two hundred pounds a year. "Tantus Morisono amor Patriæ," remarked Pitcairne. In London he found time to prepare his *Praeludia Botanica*, issued in 1669. This publication recommended him to the University of Oxford: "whereupon, by the great testimonies and recommendations of his worth, he was elected on December 16, 1669." Charles for a time continued the salary and the title of Regius Professor, but the former, as was not unusual, fell into arrears, and there is a pathetic letter from him to Sancroft, Archbishop of Canterbury (Tanner MSS. *Bib. Bodl.* xxxvi., n. 216) asking for these arrears since he "is so much in debt yat I cannot appear in person. . . . I shall be forced . . . to dispond and give all over and goe shift for my wife and familie, and my thirty years' study all lost." The letter bears the laconic, and it is to be feared utterly inadequate, reply "Dr Morison £5." It may be added that he appears to have had only forty pounds a year from the University. At Oxford Morison was primarily engaged on the preparation of his great work, *Historia Plantarum Universalis Oxoniensis*, the first volume of which was issued in 1680, but he had, however, previously issued, in folio size, "*Plantarum Umbelliferarum Distributio Nova*, the earliest systematic monograph of a plant group. This is dedicated to James, Duke of Ormonde, the Chancellor, and to the Vice-Chancellor and others who paid for the twelve copper plates of figures, each of which bears the names and arms of the donors. The first issued volume of the *Historia* is called *Pars Secunda*. As he explains in his preface this refers to the *Pars Prima* on Arbores, which he meant to publish, but which has never appeared. The specimens themselves on which it was to be based, are still preserved in the Oxford Herbarium, but there is no evidence of these or, indeed, of any other plants illustrating his second volume, having been collected by Morison. The handwriting accompanying them in that of Bobart, the younger. Possibly in many cases they may have been actually seen by Morison. He did not live to complete more than nine of the fifteen sections in which he arranged herbaceous plants. About 1300 figures of plants are given on 126 plates, each of which had been given by some generous and usually distinguished donor. Morison, however, was not only an able botanical writer, but he lectured in the open air " in the middle of the garden (with a table before him) on herbs and plants thrice a week." He introduced a variegated form of the greater Maple, miscalled the Sycamore, from Magdalen Grove, and also had from Blois a variegated form of the *Dulcamara*. His end was untimely and tragic. He had gone to London to procure suitable paper for the *Pars Tertia* of his *Historia* when, crossing the Strand near Charing Cross, he was knocked down by the pole of a coach. His skull was fractured and he died next day, November 10, 1683. He was buried in the Church of St Martin's-in-the-Fields. Pitcairne says " he was vigorous in body, having a mind trained to every kind of study, of ingenuous manners, calling a spade a spade, eager for true knowledge, and a hater of filthy lucre, considering the public advantage rather than his private gain."

JACOB BOBART, THE YOUNGER.

Succeeding him as acting Professor came Jacob Bobart, the younger, who for many years had been employed in the botanic garden, probably as amanuensis by Professor Morison. He was born in Oxford about 1640, and his name first appears on the title page of the second edition of the *Catalogue of the Oxford Garden*, already referred to. When quite young he prepared a collection of dried plants, which is alluded to in one of his MSS.— " ut 24 die Novembris 1666, me 2052 plantas collectas et exsiccatas habuisse numeravi," and this is still preserved in sixteen cases, although not in their original arrangement, in the

Herbarium. He succeeded his father as keeper of the Gardens in 1679, and in 1683 Dr Fell, Bishop of Oxford and Dean of Christ Church, one of the delegates of the Press, entrusted him with the great collection of seeds upon which Morison's system was based, together with 50 engraved plates (these cost about three pounds each), and as many drawn plates or figures in order that he might complete the *Historia* which Morison left unfinished. For the same purpose Dr Obadiah Walker, Master of University College, also handed over the Morison MSS. On this Bobart spent much labour, and he lived to see the third volume of the *Historia* published in 1699. His salary appears to have been forty pounds a year. He did not neglect the garden despite the effects of the great frost in the winter of 1682-3, when " oaks, ashes, walnut trees were miserably split and cleft so that they might be seen through, and this also with terrible noises like the explosion of fire-arms " (*Phil. Trans.* xiv., n. 165, Nov. 20, 766, 1684), yet Uffenbach, visiting it in 1710, found it full of plants, but with few rarities, not equal to Leyden or Amsterdam. The yews, he says, were the best he had seen on his travels. The rarer plants were all grouped in an enclosure, and behind the house where there was a small Orangery and a glass-house on either side. The whole appearance was satisfactory. He was shown *Amygdalus Nana Aegyptiaca flore pleno*, and Bobart told him that when it arrived Hermann of Leyden was with him. On seeing the plant his eyes filled with tears, and he said, " this is my plant." This was true, for a ship which had many plants he had obtained with great difficulty from India was captured by a French privateer, and a few came to Oxford. Bobart generously restored some of them to Hermann. A much more commendatory account is given of the Garden in 1714 by Dr John Ayliffe, who says it contains many thousands of plants. He speaks of the use it is " to many kinds of people and also for the service of all Medical Practitioners, supplying the Physicians, Apothecaries and who else shall have occasion for things of that nature with what is right and true, fresh and good for the service of Health and Life." Unlike Morison, Bobart was on excellent terms with John Ray to whose *Synopsis Methodica Stirpium Britannicarum* of 1690 he contributed a list of British plants, four being new to the British flora. Ray warmly acknowledges his help in the preface. His

Pars Tertia of the *Historia* is a monumental labour. It is a folio of 657 pages with an index, and is illustrated with 166 plates, representing something like 2000 species. All the copper plates are preserved in the Radcliffe Library. This volume suffices to establish his reputation as a highly skilled botanist, possessing a wide knowledge of plants. He was able to add, at least, ten species of flowering plants to the British flora. He was an acute observer and proved the dioecious character of *Lychnis dioica* (Blair *Bot. Ess.* 243, 1720). Linnaeus established the genus *Bobartia* in his honour, and he fully deserves the estimate placed on his work by John Ray (*Syn.* ed. ii., 1696) "celebris imprimis Botanicus, nec tamen minoris meriti quam famae." His later years at the Garden were full of disappointment. He himself made " an appeal to the Vice-Chancellor and delegates and curators of the Universitie, lamenting the declining state of the Physic Garden. It is but a melancholy consideration to look back and think (and indeed it is a great wonder) that this should be the only Publick Garden of Europe that hitherto maintained itself," and he goes on to ask for a grant in aid. Sherard (Richards. *Corr.* 9) in 1691, says that " Bobart is tired of Oxford, and would like to go to Chelsea, but Doody is to have that place."

Sherard (*l.c.* p. 11) says :—I am surprised the Vice-Chancellor has obliged him to resign his place [on account of his infirmities], and has chosen Dr Sandys, Botanic Professor : they ought to have let him spend the short remainder of his time in the Garden." As it happened he actually never left it, but died in the Garden house on December 28, 1719. He was buried in St Peter's-in-the-East Church, where there was a memorial to his memory placed in the north aisle. He left his library of 278 volumes to the University and a field near St Frideswide's for the poor of St Peter's-in-the-East for 500 years. It was then to revert to the descendants of Bobart. There is an attributed portrait of Bobart in the Botanic Garden Library. The plants in his (what is called the Morison herbarium) number about 6500. These have been identified recently. (See Vines and Druce, *An Account of the Morisonian Herbarium*, 1914). Dr Sandys, of Wadham, succeeded Bobart, then came Gilbert Trowe, of Merton, but we hear little or nothing of the Garden or of Botany during their occupation of the Chair. It was reserved for William Sherard to bring back some of its old traditions and glory.

WILLIAM SHERARD.

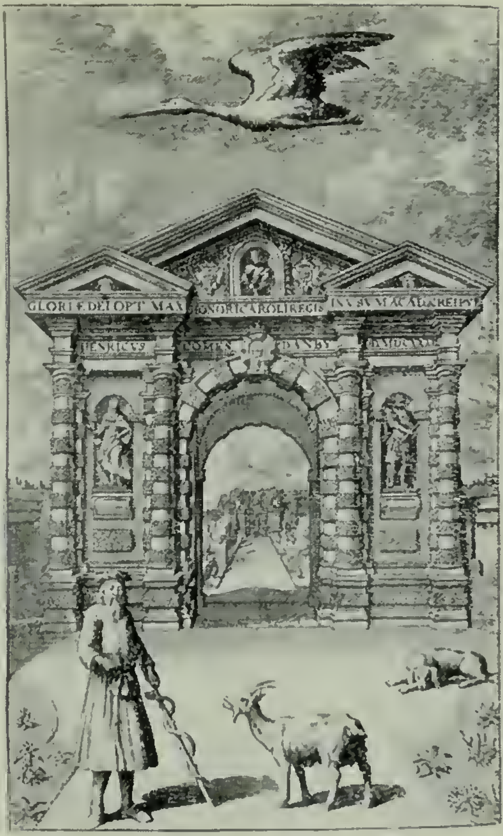
William Sherard, whose name was originally Sherwood, was born at Bushby in Leicestershire, in February, 1658-9. He was educated at Merchant Taylor's School, and in 1677 was admitted to St John's College, taking the degree of B.C.L. and becoming a Fellow in 1683. He spent much time in foreign travel, some time as tutor of Lord Townsend, studying botany under Tournefort at Paris. It was at that eminent Botanist's suggestion that he contemplated the continuation of Bauhin's *Pinax*—the *Index Kewensis* of that day. About 1704, he went as our Consul to Smyrna. There he collected plants, continued to work at the *Pinax*, and busied himself with antiquarian research. He returned to England in 1716, having made a large fortune. He took up his residence at Barking Alley, London, living in the greatest privacy. He accumulated a very large herbarium, was in correspondence with foreign botanists on terms of great friendship with Hermann and Vaillant, and became a patron of the science. He was much esteemed by John Ray, who inserted many of his British discoveries in the *Synopsis*, and was in constant correspondence with Dr Richardson of Bierly, whose original letters have recently been acquired by the Bodleian Library. Nichol prints seventy-five of these letters in vol. i. of the *Literary Anecdotes.*

On one of his continental journeys he met with Dillenius, whom he afterwards induced to come with him to England, bringing with him "most, if not all of his Fungi painted, and all his Lichenes, Lichenastra, and Muscos, neatly designed." Dillenius lived with him at Barking Alley, where both assiduously worked at the *Pinax*. As a third edition of Ray's *Synopsis* was badly needed, Dillenius was entrusted to bring it up to date, but as it was thought that a foreign botanist's name on the title-page might be prejudicial to its sale, it was published anonymously. It was doubtless financed by Sherard, who also assisted Hermann, and probably wrote the *Schola Botanica*, which was published at Amsterdam in 1689. He determined to do something for Oxford, and in 1726 gave £500 to enlarge its conservatory, and presented many books and rare plants. He likewise made over his very large herbarium of something over

14,000 sheets. On his death in 1728, it was found that he had endowed the chair of botany with £3000, hereafter known as the Sherardian Chair, on the condition that Dillenius was made its first professor, and that the University should give yearly the sum of £100 towards the upkeep of the Garden. Sherard lies buried in a nameless grave at Eltham, in Kent, where his brother James had a noted garden.

DILLENIUS.

An engraving of the Oxford garden made by Williams (*Oxonia Depicta*, t.viii.), shortly before Dillenius took up his residence, shows it to be arranged in 16 squares, with a dwelling-house bordering the street. In order to widen the approaches to Magdalen Bridge this was removed by the Street Commissioners in 1790, and the front of the garden itself narrowed. The main street was raised so as to make the approach to the bridge easier, but this prevented a level and easy entrance to the north gateway. Dillenius took up his residence in 1734, and received the degree of D.M. in 1735. As a full account of his life and works has already been published in *An Account of the Dillenian Herbaria*, by G. C. Druce and S. H. Vines, 1907, we may briefly point out the salient features of this great botanist's career. He was an indefatigable worker, but his chief life's work, the *Pinax*, has never been published. The MS. is preserved in the Botanic Garden Library. Dillenius was, however, something more than a great Indexer. In the *Pinax* he made his identifications and reductions of species. In his earlier works he established many genera which Linnaeus took up. As regards British Botany he made a celebrated journey into Wales, of which a verbatim accounts is given (*l.c.* xliv.), when some new varieties and species were discovered, including *Viola Curtisii*, *Anthyllis Dillenii* and *Potamogeton nitens*, and he was the first to recognise *Koeleria vallesiana* in Somerset. This lay forgotten among the odds and ends of his collection, and had become separated from its label. About 180 years after it was gathered, the writer went to Uphill, and re-discovered it there. Some years of labour were spent in producing the large and sumptuous *Hortus Elthamensis*, with its 417 well-drawn and engraved figures of the plants growing in James Sherard's garden at Eltham. Many were new to science, and several new genera were established. His description of the plant we know as *Solidago cambrica* is a good example of his painstaking accuracy. There is a finely coloured copy in the Oxford den Library. Sprengel and Linnaeus gave great, but not undue, praise to this work. The type-specimens are preserved in the Oxford Herbarium. As we have said Dillenius bore the cost except that James Sherard paid thirty guineas for 10 copies, and he had an extra one gratis. The loss was upwards of 200 guineas, and besides the time and labour it crippled Dillenius for life, as we shall see later on. James, the brother of Dillenius' patron, William Sherard, was a physician, and had a great garden of rare plants at Eltham, but he was a mean creature, who complained that Dillenius, in preparing it "only had for his chief care to improve and advance the knowledge of botany." This reproach throws a lurid light upon James Sherard, who intimates that Dillenius' first care should have been to adorn his garden. After taking up his residence in Oxford Dillenius became sedentary, and worked in the Library and Herbarium rather than in the field, yet he kept up his friendships with British and foreign Botanists, including the illustrious Haller. He added little to the knowledge of the flora of the Oxford district. Some years of his later life were spent in describing the plants and etching the copper plates for his important work, the *Historia Muscorum*, which was published in 1741. It has eighty-five plates and 576 quarto pages, in which about 600 "mosses" are described. This volume was issued at a guinea, but it sold slowly, and he was a considerable loser. The specimens on which the descriptions are based are at Oxford. Their names have recently been freshly revised. He commenced an abridged edition, which was to have been issued at half price, but he did not live to complete it. Regarding his edition of Ray's *Synopsis* it is necessary to say that Dillenius made most valuable additions, which are usually printed in a different type. He added about 40 Fungi, 40 Algae, more than 150 Musci, and about 200 Phanerogams and Filices. For 36 years it was the text-book of British Botanists. Among the plants of special interest it contained the first description, as a British plant, of *Nitella mucronata*, from Isleworth. In the course of the next two centuries it had been found only twice, i.e., in Sussex and Hants, until in 1892, the writer found it in great quantity at Godstow.


GLORIÆ DEI OPT MAX
HONORI CAROLI REGIS
IN USUM ACAD ET REIP
HENRICUS
COMES
DANBY

JACOB BOBART. INIGO JONES' GATEWAY.

ENTRANCE TO BOTANIC GARDEN.

Unaccountably, it has died out there, and has not been seen since. In 1736, Linnaeus, who had been to London, through the generosity of Cliffort, came to see Dillenius. Dillenius was rather annoyed with him, because he thought that in his *Genera Plantarum* Linnaeus had not done him justice or indeed had been unjust. When Linnaeus came to the Oxford Garden, Dillenius was talking to Dr Shaw, the great traveller in Barbary, whose plants Dillenius had identified, and not thinking Linnaeus would understand English, remarked " this is the young man who would confound the whole of Botany." Later on, it is said, Dillenius asked Linnaeus how he would classify *Linaria Cymbalaria*, which grew on the wall, and he replied so clearly, and with such evident knowledge that he received high commendation, when he remarked that he hoped that he had not brought confusion there. There are two or three versions of this tale, but they all agree in testifying to the mutual esteem which grew up between these two great men. Linnaeus stayed eight days with Dillenius, who did not leave him an hour alone during the day, and at the end of his visit offered to share his stipend with Linnaeus if he would stay and work with him. After his departure Dillenius wrote—" A new author is arose in the north, the founder of a new method. . . . I am afraid his method wont hold "—a true prediction. They continued to correspond, but so far as the Linnean letters go all appear to have perished.

The difficult task of deciphering the letters of Haller was accomplished by Dr Vines (*l.c.* xciii-cxii). Both Haller and Dillenius were opposers of the Artificial System of Linnaeus, and with much in common it was to Haller that Dillenius looked to complete the *Pinax*. The sedentary life and too close adherence to his desk led to increased stoutness, and Dillenius died suddenly on April 2, 1747, aged 63 He, too, is buried in the church of St Peter's-in-the-East, where there is a monumental tablet to his memory. The monetary loss which had been caused by James Sherard's meanness left him so poor that there was not enough money to pay for his funeral, so that his library had to be sold. Thus passed away one of the greatest botanists of his time. Linnaeus bears testimony to the departed Professor's merits, as will be seen from extracts from his letters and writings. " There is nobody in England who under-stands or thinks about genera except Dillenius." "I have dedicated my new edition of *Fundamenta Botanica* to Dillenius, yourself [Haller], Van Royen, Gronovius, the Jussieus, Burmann and Amman, placing your names in this order, which seems the just one, you being all the most eminent botanists of your time." "Dillenius on Mosses is a most learned work." "His loss to science is unspeakable." Linnaeus founded the beautiful genus, *Dillenia*, which belongs to a family of its own, the *Dilleniaceae*, in honour of him—" it is of all plants the most distinguished for the beauty of its flower and fruit like Dillenius among botanists." There is a three-quarter length portrait of him in the Bodleian Library given by his executor, George Seidel, in 1750, of which there is a replica in the School of Botany at Oxford. He is represented as holding a drawing of *Amaryllis formosissima* in his hand. During his tenure of office the Garden was by no means neglected. The plants established with so much skill by Bobart were carefully tended and additions freely made. Pointer in the *Oxoniensis Academia* of 1749 narrates there was " (1) true African Rhubarb; (2) the Aloe Plant, with a white flower on it. The Aloe is so succulent a plant that it has been preserved 10 years above ground without either earth or water, and 'tis thought may be preserved so 20 years, as I was informed by the late excellent botanist, Mr Bobart, Master of this Garden; (3) the True Indian Tobacco Plant; (4) Guinea Pepper Tree; (5) *Pomum Amori*, and Indian Wheat [*Zea Mays*]; (6) *Sorbus Vera* (*Pyrus domestica*); (7) *Helianthemus* or Sun-flower, of a fleshy colour and five leaves; (8) *Scylla vera*, which has a six leaved flower almost of a lead colour [? *Urginea Scilla*]; (9) *Arbor Balsami Peruviana*; (10) *Cedrus Vera*, from Mount Lebanon, with leaves like a star raised from a seed, as the aforementioned tree was; (11) *Paliurus* or Thorn with which our Saviour was crowned, as Mr Bobart told me he had great reason to believe. It grows in the corner between the gate and the house [a specimen of *Paliurus Spina-Christi* still grows near the gateway]; (12) *Pistachia Vera*, the true Pistachia Tree with leaves like a walnut; (13) the Currant Grape grafted upon the Fox-Grape; (14) the White Frontiniac Vine, grafted upon the Parsley Vine. [These grafts were due to the reverend and ingenious Robert Sharrock, LL.D., Fellow of New College]. No. 14 grew and bore well, and the earlier ripening of the Parsley Vine led to an earlier ripening of the graft. The graft of the currant upon the large, luxuriantly growing vine called Fox Grape, seemed to produce much fairer and stronger fruit than that usually upon its own stock. See Plot, *Nat. Hist.*, 1677. (15) The Sensible Plant. This unaccountable plant grows in the island, Barbada, in North America.'' Many of these rarities dated from Bobart's time.

HUMPHREY SIBTHORP.

On the death of Dillenius, Dr Humphrey Sibthorp, a scion of an old Lincolnshire family, was elected Professor. During his long tenure of the office, Sir James E. Smith says ''Botany slept at Oxford.'' Sibthorp is said to have given one not very successful lecture in the 37 years he held the post. However, Linnaeus connected, and not unhappily, his name with a small genus, *Sibthorpia*, whose type is a tiny plant with inconspicuous, inodorous flowers, of no economic value, which delights in frequenting shaded, sheltered, sequestered places: but if for no other reason we value him for the sake of his son, John Sibthorp, who is one of the illustrious few of Oxford's own.

JOHN SIBTHORP.

He was born in 1758, in the city, was educated at Magdalen School, entered Lincoln College, and joined University College, taking his M.A. in 1780, and his M.B. in 1783. He studied medicine in Edinburgh and ascended Ben Lomond, making a list of its plants for botanical study. He catalogued the plants he found in Lincolnshire, Surrey and Devon. He took the Oxford M.D. in 1784. Having obtained a Radcliffe Travelling Scholarship, he visited Switzerland and France, staying for some time at Montpellier. An inheritance of considerable value from his mother, who was his father's second wife, made him independent of the medical profession. To him that hath shall be given. His father, succeeding to the family estate, resigned, it could scarcely be said he relinquished, the Sherardian Chair. John succeeded, and took up the duties of his office, such as they were. It was when he was at Göttingen in 1784, that he first made up his mind to visit Greece, doubtless with the example of Sir George Wheeler before him. At Vienna he met with the celebrated botanist, Jacquin. There he saw the unique brush-drawings of Dioscorides, and there he was introduced to a young draughtsman, Ferdinand Bauer, the son of the court painter to Prince Liechtenstein. There Jacquin gave him a copy of the copper plate engravings made from the Dioscorides figures, of which five only had been made by order of the Empress Marie Thérèse. In March, 1786, accompanied by Bauer, he started from Vienna, passing through Carniola to Trieste, Venice, Bologna, where one suspects he acquired Gregory of Reggio's herbarium, Florence, Rome and Naples. Bauer's first drawing is of the Colosseum, and there are many of Naples, Baiae, Vesuvius, Ischia, and Capri. They sailed from Naples in May, touching at Messina, of which Bauer gives a pleasing sketch, and another, not so finished, of that incomparable view of Etna from the Greek theatre at Taormina. Two or three views of Stromboli and the Lipari Islands are included. Passing Cerigo they touched at the island of Melos or Milo, where the Venus was still hidden. Bauer has made three sketches, one of which shows the unprotected roadstead. By June they reached Crete, when "Flora was in her gayest attire, and the snowy covering of the Sphakiote Mountains was withdrawing." Here they stayed, and Bauer has paintings of Canea, the monastery of the Holy Trinity with its formal Cypresses, the Sphakiote Mountains and the celebrated snow cavern, where even in the blazing heat of summer the snow lies unmelted. Many new plants were discovered, including *Veronica thymifolia*, *Asperula incana*, *A. rigida*, which he found near the monastery of St John, *A. suberosa*, *Galium junceum*, *G. incurvum*, *Onosma erecta*, *Lysimachia anagalloides*, *Rhamnus prunifolius*, *Ferula thyrsifolia*, *Linum caespitosum*, *Daphne taxifolia*, *Gypsophila dianthoides*, *Silene ramosissima*, *Rosa glutinosa*, *Teucrium alpestre*, and numerous others, making a wonderful haul. Most of these were exquisitely painted by Bauer. On leaving Crete they narrowly escaped ship wreck near the isle of Melos. They afterwards passed the harbour and town of Hydra, where *Campanula anchusiflora* was gathered. Ægina, in the Saronic Gulf, was visited, Siphnos, one of the Cyclades, with its little town perched on a conical hill was passed, and they landed at the adjacent isle of Antiparos in order to explore its celebrated grotto, where the *Capparis rupestris*, a new species in Bauer's sketch, is shown growing at its entrance. Bauer gives several views. The curious isle of Amorgos with its Roraima-like hill was seen, and there are good views of its town and harbour. On the hill grows *Helichrysum amorginum*, with its beautifully white everlasting flowers, in its only habitat. Samos, on the Anatolian coast was touched, and Bauer supplies a striking view of the Temple of Juno, while Sibthorp collected some new species, including *Campanula drabifolia* and *Convolvulus sagittifolius*, var. *Sibthorpii.* They then reached Smyrna. There they stayed for some time. Curiously, Bauer gives us no pictures of it so, probably, despite its name, the malodorous town did not appeal to him. From it they travelled overland to Broussa, the old capital of the Turkish Empire, following in the steps of the Consul Sherard, the founder of the Sherardian School of Botany at Oxford. In the glorious scenery of that delightful and historic town the artist and the botanist must have greatly rejoiced, and the clear, sweet air must have invigorated them after the horrors of a Greek sailing boat. On the way Bauer painted Scala Nova, and a vivid sketch of a caravan bivouacking, the ring of camels, and the ring of mules enclosing their respective saddles and loads, while outside their owners are enjoying their evening meal. On their way they gathered *Cyperus rotundus*, var. *major*, *Scabiosa eburnea* and *Silene mollis*, and Bauer gives a distant view of the Bithynian Olympus and a charming scene, the approach to Broussa through the chestnut groves, showing the minarets of the beautiful city, the rival to Granada in its picturesque situation: It is said to have three hundred mosques. This view is reproduced in the third volume of the *Flora Graeca*. Sibthorp more than once climbed Mount Olympus and he made some important discoveries on this splendid hill. They found many plants new to science, and other rarities. They include *Alopecurus lanatus*, *Pedanthum limonifolium*, *Festuca punctoria*, *Scabiosa ochroleuca*, *Asperula nitida*, *Galium coronatum*, *Plantago gentianoides*, *Myosotis nana*, *Campanula betonifolia*, *Phyteuma Sibthorpianum*, *Viola gracilis*, *Saxifraga Sibthorpii*, *Heracleum humile*, *Seseli caespitosa*, *Euphorbia pumila*, *Lathyrus aureus*, *Xeranthemum cylindraceum*, etc. The winter was spent at Constantinople, where he noticed about 800 species, and here Bauer painted about thirty views, many of great beauty and interest.—The Golden Horn, Seraglio Point, the Prinkipos Islands, etc. They stayed on the Isle of Karki from

October 19 to December 20. Sibthorp's bill for lodgings and food came to 407 piastres and 19 paras. There he collected fish and birds which have been superbly painted by Bauer but never published. A glorious view of Constantinople (No. 53) is reproduced in Vol. IV., 1823. There are many views of the Dardanelles and the Bosphorus where " the dolphins play around us," of the Palaces which line its shores, and of Hellespont. In February they visited Belgrade and there is a splendid drawing of the aqueduct built by the Romans which supplies the city with water. There are views of the Tower of Oblivion, of Buyukdere, and of the entrance to the stormy Euxine. At Constantinople they were joined by Captain Emery and Mr Hawkins of Dallington, Northamptonshire (one of Sibthorp's Executors), and the party set out for Cyprus in a Venetian merchant ship, passing through the Dardanelles. They stayed long enough near Tenedos to allow Bauer to paint it, and hugging the Anatolian coast sailed across the Archipelago of which several sketches were made including the Islands of Lero; Cos, the birthplace of Hypocrates; and Patmos. Bauer made some very fine sketches of the Monastery of the Apocalypse. They touched at Mitylene and Rhodes of which there is a lovely view taken from the land, looking between the two harbour-towers seawards. They stayed five weeks in Cyprus, but Bauer has only three views—-Monte Croce, The Monastery, and Ipsora. Here Bauer discovered the interesting *Pinguicula crystallina.* Other discoveries included *Cotula tridentata*, *Linaria Sibthorpii*, *Bupleurum nodiflorum*, *Allium Dioscoridis*, *Athamanta multiflora*, *Polygala venulosa*, *Daucus involucrata*, *D. littoralis*, *Silene discolor*, *Arenaria picta*, *Wilckia lyrata*, *Kentranthus orbiculatus*, and *Salvia crassifolia*. Returning northwards from Cyprus, they kept close to the Asian coast, and landed at Porta Finica. They skirted Cape Chelidonia securing an interesting sketch of an Asian village sheltered by Oriental Planes, under which water-buffaloes are grazing. Views of the Isle of Lero, and of Argentiera were obtained. They reached Athens on 19th June 1787. There Bauer painted thirteen views of which three are missing. The ten include three superb drawings of the Theseum. The view of Athens from Mount Anchesmus is poorly represented in Vol. V. of the *Flora*. The original is a splendid study as it shows Athens as it was in 1787 with the distant mountains about Salamis and the Gulf of Corinth

There Sibthorp gathered many novelties, including *Chondrilla ramosissima*, *Tunica ochroleuca*, *Dianthus serratifolius*, *Silene rigidula*, *S. congesta*, and *Veronica glauca*. From the classic capital the travellers visited Livadia, where Bauer gives drawings of the Fountain, the Grotto of Trophonios, the renowned Oracle, and Mount Parnassus (reproduced in Vol. I.). Many additional species were found here by Sibthorp, including *Achillea holosericea*, *Cepharlaria ambrosioides*, *Staehelin a uniflosculosa*, *Silene caesia*, *S. linifolia*, *Asperula lutea*, *Daphne jasminea*, *Biasolettia pumila* and *Jurinea glyacantha*. They made an expedition to Cape Colonna where Bauer prepared magnificent studies of the Temple of Athens, where Byron had written "Place me on Sunium's marbled steeps." Round the bold headland the travellers probably had a bad time with the fierce currents which surge by as they journeyed to Euboea, then called Negropont, the largest Greek island. Of this island five excellent drawings are given. They ascended Mount Delphus in a storm of wind and rain on 3rd August, but its rich botanical treasures rewarded them for their laborious, if not perilous, adventure. Their finds included *Silene articulata* and *Euphorbia deflexa*. Then they had a week's voyage to Mount Athos near to the Isle of Lemnos. Sibthorp thought Athos was the richest place for flowers of the many he had visited. Bauer gives four fine paintings—the Convent of St Anna (reproduced in Vol II, 1813); the Convent of Iviri; the Summit of the Mountain, and a view of Athos from the West. The new finds included *Anthemis Sibthorpii*, *A. pectinata*, *Cephalaria graeca*, *Dianthus strictus*, *D. gracilis*, *Phlomis lunarifolia*, *Digitalis leucophaea* and *Hieracium bracteolatum*. They returned to Athens, and then went on to Salonika of which there are three good views, one showing the crowded harbour and Mount Kurbach, the Gulf of Salonika, and a glowing view of Lake Petriski and the Village of Pechliger. Then they retraced their steps to Athens and proceeded to Dodeca and the Port of Megara—a city which reached its zenith in the 8th century B.C., and colonised Byzantium on the Bosphorus, Heracleia on the Euxine, and Megara-Hyblaea in Sicily. In September 1787 they came to Corinth, of which there is a view from the Gulf of Ægina, one of the Temple of Neptune and one of Corinth, which is reproduced in Vol VII, 1830, and another still better from Lepanto. They reached Patras of which there is a telling sketch of the town and Venetian fortress, and gathered *Cyperus comosus.* They left Patras on the 24th September, passing by Gibraltar,of which Bauer gives two views. So bad was the voyage with long delays that they did not reach England till December 7th, 1787. Sibthorp on his return to England was much weakened by the privations he had endured, but some measure of strength was regained. His great merits were recognised by the University. He worked assiduously at the *Flora Oxoniensis* having a willing helper in James Benwell who was employed in the Garden. Benwell had a good knowledge of the local flora and attended Sibthorp on his floral excursions and himself discovered some rare plants. He died in 1819, at the age of 82, having earned the respect and esteem of all who knew him. In the spring of 1788 Sibthorp entertained in Oxford Sir Joseph Banks (to whom he dedicated the *Flora Oxoniensis*, and to whom he gave many of his Greek duplicates), Mr Dryander and Sir James E. Smith.

Despite his assured position, his wealth, his love for agriculture, and of England, Sibthorp was still urged by a feeling that he had not completed the task he had set himself, and determined that he would make another expedition to the East. He remained in England only long enough to issue the *Flora Oxoniensis* in 1794. It is in Latin, and enumerates about 750 species of Flowering Plants and Ferns, 90 Musci, 20 Hepaticae, and over 340 Lichenes, Algae and Fungi. Writing to Sir J. E. Smith, who was then bringing out the first edition of Sowerby's *Botany*, he says that he has seen all the species which he enumerates in the *Flora Oxoniensis*, by no means a light task. It brought the knowledge of the County flora well up-to-date and remained without a local rival for nearly half a century. In 1794, accompanied by a Maltese, Francesco Borone, as Botanical assistant, Sibthorp, then in delicate health, set out for Constantinople, joining on the journey the suite of the Ambassador to the Ottoman Empire, Mr Liston. They travelled by way of Ostend, guarded by a convoy. He suffered much from sea-sickness. The party posted to Ghent and Brussels, the latter very gay despite the horrors of war with which it was surrounded. They passed through Lovain, Liège, Aix-la-Chapelle, Bonn, Nuremberg, and reached Ems on the 11th. On the 16th they were at Vienna, where Sibthorp met the great Austrian Botanist, Host, and Joseph Jacquin.

and was shown the Belvedere Gardens. There he found the elder Jacquin completing his monograph on *Oxalis*, and there he went over the garden at Schönbrun which rivalled Kew in the multitude of its treasures. Leaving Vienna and travelling through the rich Hungarian plains by Rosenthurm into Wallachia, they reached Bucharest on May 5th, and passing through Bulgaria they came on May 9th to the minaretted city of Constantinople. There he met Mr Hawkins of Dallington, and they visited Belgrade, where he found an *Epimedium* which he mistook for *alpinum*. They crossed over the Sea of Marmora, once more to explore Olympus. The dolphins in the Bosphorus afforded them a pleasurable sight. In September they passed down the Hellespont, spent two days in examining the plains of Troy, and then proceeded to Imbros and Lemnos. Ten days were spent in the vicinity of Athens, as they were blockaded by pirates. Their journey led them to Skiatho, thence to to Negropont, and on the 13th passed under the five-arched bridge which connects Euboea with the mainland of Greece, reaching the Piraeus on the 15th of September. They spent four weeks at Athens where Borone met with his death by falling from a window while sleep-walking. On November 16th Sibthorp left Athens by the ancient Eleusinian way, and proceeded to Patras and Zante. In that pleasant island he spent the winter, purchasing from an apothecary a good herbarium of the island plants. In February 1795 the Morea was visited and in two months a complete circuit of the peninsula was made. The Violet and Primrose welcomed them in the plains of Arcadia, and *Narcissus Tazetta*, which Dr Sibthorp was disposed to think the true poetic Narcissus, decorated in profusion the banks of the Alphaeus. On the oaks of the Arcadian Mountains grew the Mistletoe, *Loranthus europaeus* (the English Mistletoe was said to grow in Greece only on the silver fir), and in Arcadia too they found the silvery white stars of *Ornithogalum nanum*. They visited Argos and Mycena where they saw much to interest them in the ancient ruins, and noticed heaps of shells of *Murex truncatus* which afforded the Tyrian purple dye. Then they travelled to Corinth, Patras and by way of Elis to Pyrgos. Guarded by a Turkish escort they reached Calamata by the 13th of April. By boat they travelled along the rocky shore to Cardamoula. They climbed the splendid mountain, Taygetus, in the Morea, but owing to bad weather could not reach the summit. Among other plants they found *Euphorbia Apios*, a plant whose emetic and purgative properties were known to Dioscorides. They returned to Calamata by way of Mistra, and sailed from Corone in a Venetian vessel. Here on April 29 Hawkins went on to Greece and left Sibthorp, whom he was destined never to see again. Sibthorp left Zante, where he found *Scorzonera crocifolia* and *Crepis fuliginosa*, on May 1 for Otranto, having a most tedious journey, which instead of taking five days, actually took twenty-four. They touched at Cephalonia and Prevesa, visiting the ruins of Nicopolis where Sibthorp took a severe chill from which he never recovered. As he says the air of Prevesa is even deemed by the Greeks as infamous. He then went to Ancona and posted through the Tyrol, paying a visit to Schreber at Erlangen, who received him with great politeness. Schreber was preparing a monograph on *Carex* and had adopted Goodenough's names. Then he went to Göttingen to see Hoffman. Sibthorp reached England in the autumn of 1795 and was at Oxford on October 8th, very ill, and dieting himself on asses' milk. He was able, however, to take gentle horse exercise. But his disease made progress. The milder air of Ashburton in Devon was unavailingly tried, then, as a last resort he went to Bath. There he died in February 1796 at the early age of thirty-eight. He lies buried in the Abbey Church where there is a bas-relief monument by Flaxman to his memory. "No name has a fairer claim to botanical immortality among the martyrs of science than that of Sibthorp."

About 2300 species of plants were collected on the two journeys, many of which were new to science. Bauer had been not less industrious as his 965 beautiful and accurate drawings of plants testify. In addition there are water-colour drawings of Mammals, Birds and Fish, which are as yet unpublished. Sibthorp left to the University of Oxford, in addition to monetary bequests for publishing the *Flora Graeca* and to endow a Chair of Rural Economy, his collection of dried plants, and collection of animals, preserved or dry, to be deposited in the Library of the Professorship of Botany. The residue of his estate he left to his father, Humphrey Sibthorp. The preparation of the *Flora Graeca* was entrusted to Sir James E. Smith—the first volume appearing in 1806. There were twenty-five subscribers at £240 each and six other copies were printed for sale. The last volume was issued in 1846. One hundred of Bauer's magnificent paintings had been most excellently etched on copper-plates by Mr J. C. Sowerby at a cost for engraving of each plate of about £14. The total cost of the book was £15,572 6s 10d. The sales of the 31 copies came to £5863 10s 1d, so that there was a deficit of £9708 16s 9d to be met by the Sibthorp estate. It may be added that Robert Brown edited Vol. vii., and Dr Lindley completed the Vols. viii., ix. and x. The writer is fortunate enough to possess the executor's, Mr Platt's, own copy as well as the correspondence and accounts relating to its publication and the minutes of the trial between the executors and the British Museum on a question of copyright, as heard before the Court of King's Bench on January 11, 1827, the Attorney-General and Solicitor-General appearing for the British Museum. Judgment was given in favour of the Executors. The case was carried to the Exchequer Court on January 29, 1828, and heard before Mr Justice Parke and Mr Justice Gazelee. The judgment was affirmed on February 11, 1828 in favour of the Executors. It was supposed that Sibthorp's correspondence was also left to the University, but it has perished.

Dr Williams of Christ Church was appointed Professor in 1795. His chief merit appears to be that he selected William Baxter in 1813 to be gardener, and under his instructions and careful management the old traditions of Bobart were revived. Botany was, however, at its lowest ebb and Dr Williams, although an elegant scholar, added nothing to botanical science and for practical instruction the undergraduates had recourse to the teachigns of Mr Baxter.

WILLIAM BAXTER.

Baxter brought together a nearly complete collection of the British Willows. He was a careful and laborious investigator of leaf-fungi, and to this he was driven "partly from finding it impossible to make the garden such as he could wish. This industrious man—with the assistance of three persons, each of whom receives 2s per day—cultivates between 4000 and 5000 species of plants in the wretched houses of this garden, though in fact there is only one stove, properly so-called, and this is much too small." (Schultz, 1824). See *Bot. Misc.* i. Baxter himself produced in six volumes an excellent work, *Phaenogamous*

Botany, illustrated by well etched copperplates of each genus of British plants and these were well coloured in Oxford. He also started a Natural History Society in 1832, and he greatly helped the Rev. R. Walker in his preparation of the *Flora of Oxfordshire.*

On the death of Dr Williams, Dr C. G. B. Daubeny was appointed Professor on February 8, 1834, when he was thirty-nine years old. He made extensive alterations in the gardens, and built the Victoria Lily House and the Orchid House, incidentally spoiling the appearance of Danby's stately wall. As a compensating asset there was a memorable meeting of the British Association in the Garden in 1847. Baxter's position, however, was not made much more important, and he was allowed to retire on an "wholly inadequate pension" in 1851 when he was succeeded by his son, Mr W. H. Baxter, who planted the trees and shrubs in The Parks. Professor M. A. Lawson, a native of Durham, was elected Sherardian Professor in 1868, an office which he held till 1882, during which time little change took place. He never created enthusiasm in his subject. On his retiral he went out to a Cinchona plantation in India, where he commenced a Herbarium, and was spoken of in terms of admiration by Mountstuart Grant Duff when he was governor at Madras.

PROF. I. B. BALFOUR

Two years after his retirement from Oxford, Prof. Isaac Bayley Balfour was appointed, and in his vigorous clearance the grandson of old Mr Baxter was cashiered, the arrangement of the flower-beds was changed from its old Linnean method to the modern system, not without some losses, the Herbarium was brought from its old home to the late professor's dwelling-house, and some of the old collections were cut up and re-assorted. Professor Balfour also brought from Kew, a capable gardener, Mr W. G. Baker, and an air of industry pervaded the peaceful precincts. But he was here too short a time to let his brilliant talents bear fruit. A herbarium curator — a German, Dr Schönland, was appointed, and some attempts were made to get the Herbarium into order. One may add that in the interregnum before Balfour's appointment much had been done to overhaul the collections which were in a state of chaos. In a search for Sibthorp's English plants it was my good luck to find in an outhouse exposed to the weather, the valuable herbarium of Italian plants collected by Gregory of Reggio in 1606—the oldest

MAGDALEN COLLEGE TOWER.

collection with the names of localities appended in Britain. It had been rejected and put outside with poor Baxter's plants, Dr Ayres' collection of plants from Thame, Bloxam's Brambles and Trimmer's Mints. The two last were alive with larvæ. Professor Balfour presented us with his Herbarium which he made at Edinburgh and also with his Socotra plants. In 1888, he was appointed Regius Professor at Edinburgh.

DR S. H. VINES.

Dr S. H. Vines was chosen Sherardian Professor in 1888, and during his long tenure of office continued efforts were made to keep the garden up to its old traditions, to increase the Library and the Herbarium, developing the latter mainly to make it thoroughly representative of the European and Mediterranean area. He also rebuilt the glass-houses. Serving as I did under him for over thirty years, I know how unwearying he was in maintaining and extending the collections under his control. It has been my lot to rearrange the whole collections and to make the Herbarium consultable. We published two accounts of the Herbarium, in 1897 and 1919. The acquisitions which are noticed in the edition of 1919 speak for themselves. We also published an account of the Dillenian Herbarium and of the Morisonian Herbarium in which we gave, not only the biographies of those two distinguished botanists, but also an identification of the numerous species these herbaria contain. Dr S. H. Vines retired in 1919 when Sir Frederick W. Keeble, F.R.S., was appointed to the chair. Information upon the garden history will also be found in the pleasantly written "Oxford Gardens," 1912, by Mr R. T. Gunther.

It is well to recognise that with all their beauty and the sense of repose which they bring to one's mind that the gardens are not large enough, and that they are not a fitting home for an Arboretum. Such a desirable addition to the beauties of Oxford might surely be found along the side of the Cherwell, Mesopotamia, north of Magdalen Bridge, in Marston Fields, Christ Church, or Merton Meadows, where trees and shrubs from many climes should produce an effect not inferior to that of the Cambridge garden or the Arnold Arboretum in Massachusetts. The planting of such an Arboretum would bear witness that in the twentieth century the rulers of the University were not less vigilant and generous than those who guarded its destinies three centuries ago, or he who gave to Oxford for the "use of the public and the University" the delightful garden of which we are all so proud.

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THE BOTANICAL SOCIETY AND EXCHANGE CLUB OF THE BRITISH ISLES.

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OF THE

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(CONVENIENTLY ABBREVIATED REP. B.E.C.)

BY THE

EDITOR AND DISTRIBUTOR,

C. V. B. MARQUAND, Esq., M.A., F.L.S.

VOL. VII. PART II.

PUBLISHED BY
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THE BOTANICAL SOCIETY AND EXCHANGE CLUB OF THE BRITISH ISLES.

(VOL. VII. PART II).

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REPORT FOR 1923

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BOTANICAL EXCHANGE CLUB

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PRINTED BY T. BUNCLE & Co., ARBROATH.
NOVEMBER 1924.

REPORT OF THE DISTRIBUTOR FOR 1923.

The number of sheets of plants received for distribution in 1923 was slightly greater than in the last three years. As will be seen in the detailed list below, contributions were received from 32 members only ; the absence from this list of two or three regular contributors' names probably accounts for the comparatively small number of critical plants sent in. These members were prevented by illness from collecting last summer. The total, however, of 5148, comprised in 388 gatherings, exceeds the average distributed.

As in the previous year, much the largest contribution came from the Secretary, but the Club is also greatly indebted to several other members who sent in parcels of plentiful supplies of a number of critical species.

Of the critical genera, *Euphrasia* was not nearly so largely represented as usual, but a considerable number of *Hieracia* were sent in, while Mr Riddelsdell, in addition to his general contribution for distribution, forwarded through the Distributor parcels of *Rubi* to eleven members, supplying in each case their special desiderata.

The specimens on the whole were good and in most cases carefully prepared, but some were very scanty. Though unavoidable in the case of rare species, this can scarcely be excused where the species are abundant, as sent in by some of the newer members of the Club. For the guidance of the latter, the Distributor would like to suggest the desirability of supplying the author of the name in each case. This is particularly necessary in the case of genera in which the synonymy of the species is greatly involved. When catalogue numbers are used, considerable saving of time could be effected if *one* standard was adopted instead of the two or more in use at present. In the case of at least one collector these numbers were incorrectly marked "Ref. No.," thereby possibly creating a confusion with the entirely distinct collectors' field number. In a considerable number of cases the spare label was forgotten, and this, of course, increases the work of the Distributor. Lastly, in many cases it was practically impossible to stamp the labels with the Club stamp without obliterating some of the data on them. The use of somewhat larger labels would obviate this difficulty.

The best thanks of the Club are due to Dr Drabble and Mr Groves for acting as referees for the *Violae* and *Charophyta* respectively, and to the members participating in the Exchange for their kindness in supplying notes on critical plants, which are printed in the *Report* below.

There is, unfortunately, still some difference of opinion regarding the status of many of our plants. Much could be done to remedy this and to settle their relationship on a basis of fact by those members who possess gardens by carefully cultivating putative hybrids and, if found to be heterozygotic, distributing series of their segregates. Without involving the more technical problems or genetical methods, much could be done by actual experiment on such genera as *Chenopodium*, *Atriplex*, and *Polygonum*, and in the *Compositae*, which are not attacked by geneticists at the regular research stations since they possess no economic value, and consequently our knowledge of their characters is still very slight.

The Honorary Editor and Distributor much regrets the late date of this *Report* going to press. The amount of work involved increases yearly, and in his case coincided with great pressure of other duties. There is some compensation in the fact that he was enabled to include critical notes from two members who were prevented by illness from sending them in until late.

C. V. B. MARQUAND.

Andreaea, Kew Gardens.

LIST OF PARCELS RECEIVED.

	No. of Specimens.
W. C. Barton, ...	525
Spencer H. Bickham, ...	110
W. Biddiscombe, ...	120
C. E. Britton, ...	119
G. C. Brown, ...	336
R. J. Burdon, ...	60
John Cryer, ...	104
L. Cumming, ...	131
H. Downes, ...	110
G. C. Druce, ...	982
Mrs D. J. Evans, ...	80
John Fraser, ...	31
H. H. Johnston, ...	70
J. E. Little, ...	291
C. V. B. Marquand, ...	80
W. H. Pearsall, ...	142
H. J. Riddelsdell, ...	520
F. Rilstone, ...	59
F. Robinson, ...	74
Miss Ida M. Roper, ...	105
C. E. Salmon, ...	26
R. L. Smith, ...	137
South London Botanical Institute, ...	179
T. Stephenson, ...	60
National Museum of Wales, ...	179
T. J. Wall, ...	63
Alfred Webster, ...	26
J. A. Wheldon, ...	148
James W. White, ...	119
Miss A. Wilkinson, ...	50
A. Wilson, ...	94
A. H. Wolley-Dod, ...	18
	5148

Thalictrum minus L. [Ref. No. AA 504.] Banks of Loch Tay, Fearnan, Mid Perth, August 1923.—G. C. DRUCE and D. HAGGART. "Fearnan is the Gaelic word for Alder. This is the *T. Kochii* of the local botanists. Moss in *Camb. Fl.* gives as habitats 'calcareous grass land and sand dunes.' Has any botanist found restricted *minus* in the latter habitat? Rock-ledges on hills, a not unusual habitat, is not given. As will be seen in these specimens, the fruiting peduncles are erect or ascending."—DRUCE.

T. dunense Dum. Grassy slope near sea, S. Pembrokeshire, v.-c. 45, July 19, 1923.—T. J. WALL.

T. majus Crantz (?). I gathered these from stony shores of Lake Windermere, in Wild Duck Bay, July 21, 1923. I intended to gather mature fruit and the lower leaves during late September. Unfortunately, that month was the wettest I remember—over 7 in. was collected in Low Furness and much more near the lake—and as a consequence the plants were under water most of the time and useless for the purpose of drying. All the specimens sent were growing together in a dense mass, but exhibited very considerable variation in the size and shape of the ultimate pinnate divisions of the leaves.—W. H. PEARSALL. "I should hesitate to put this to *T. majus* Crantz as the leaflets are much too small. It fits plants which have been distributed through the Club as *T. Kochii.* A monograph of the British species is badly needed."—DRUCE.

Ranunculus repens L., forma. Spring on south side of Cross Fell, Cumberland, at 2350 feet, August 1923.—A. WILSON.

R. Flammula L. Growing in shingle on the shores of the lake, Menlough, Galway, August 20, 1923.—D. J. EVANS.

R. muricatus L. Weed in cultivated ground, St Mary's, Scilly Isles, June 14, 1923. In considerable quantity and well established. Alien, S. Europe.—HAROLD DOWNES. "Yes. On the continent it varies greatly in size."—DRUCE.

R. heterophyllus Weber. [Ref. No. AA 244.] Near Postcombe, Oxon, July 1923. I am a little dubious as to the name. It is near *radians* Revel, the carpels being very hairy. The large flowers take it from *trichophyllus.* I am not sure whether *radians* ought not to receive specific rank, as it seems distinct from *trichophyllus.*—G. C. DRUCE.

R. radians Revel. The typical plant, from quarry pools at Wickwar, W. Gloucester, v.-c. 34, June 5, 1923. See *Notes on British Batrachia* by W. H. Pearsall in *Rep. B.E.C.* 445, 1921, where Revel's original description, with his subsequent emendations, are given at length. But I must say that to me the position allotted to *radians* as a variety of *trichophyllus* appears altogether unsuitable. If not to be classed as a distinct species—which, in my view, it should be—its closer affinity is probably with *heterophyllus* rather than with *trichophyllus* I think we ought to agree that no plant with floating leaves should be placed under the latter, for the experience of students in general brings conviction that *trichophyllus* never has any. And what advantage can there be in grouping these forms together as an aggregate under one or the other? Surely it is more reasonable and convenient to regard *Drouetii*, *trichophyllus*, and *radians* as good species, readily separable as they are wherever I have seen them. We invariably find trouble when trying to make British forms fit in with descriptions of plants growing on the Continent. They seldom do so with precision. For example, on reading the matter relating to *Drouetii* which Mr Pearsall has got together (*loc. cit.*) we see that the various authors must have had in hand at least two different forms, neither of them identical with the one we know at home.—J. W. WHITE. "I agree. Shows the passage from submerged leaves to radiate ones and then to the tripartite floating ones. The latter are not always so well developed as in this case, while the radiate leaves are sometimes more numerous."—FRASER.

R. lutarius Bouvet. Catsfield, E. Sussex, 1894-5. See *Rep. Wats. B.E.C.* 38, 1905-6. I quite agree with Mr Pearsall that these Catsfield plants are *R. lutarius* and not *tripartitus*, as I previously thought. —C. E. SALMON.

R. Lenormandi F. Schultz. Moorland rill at 1400 feet, north-west of Buxton, Derbyshire, May 20, 1923.—J. W. WHITE.

Helleborus viridis L., var. *occidentalis* (Reut.). Roman encampment. Leigh Woods, N. Somerset, February 18, 1892.—J. W. WHITE.

Actaea spicata L. Great scar limestone. near Ribblehead, Mid-west Yorkshire, at 1150 feet, August 14, 1923.—A. WILSON.

Papaver Lecoqii Lam. [Ref. No. AA 268.] Witney, Oxon, growing with *P. dubium*, but distinguishable at a glance from it, not only by its capsules but by its foliage. July 1923. It is a rare plant in the county.—G. C. DRUCE.

Fumaria. River embankment, right bank of River Thames, near Windsor, Berkshire, July 27, 1923.—C. V. B. MARQUAND.

Matthiola sinuata L. St Ouen's Bay, Jersey, June 16, 1923.—W. C. BARTON. "The authority is [Brown] in Aiton Hort. Kew, not L." —DRUCE.

Barbarea stricta Andrz. By brick-pits, Gloucester, v.-c. 33, May 24, 1923. Not native in this locality. One large plant and one or two small ones.—H. J. RIDDELSDELL. "Immature specimens. Are they *stricta*? Some of the buds have a few hairs."—DRUCE.

B. verna Asch. [Ref. No. 647.] St Catherine's Bay, Jersey, June 15, 1923.—W. C. BARTON. "Probably correct, but a starved example, with the lower leaves reduced to a terminal lobe."—I. M. ROPER.

B. vulgaris R. Br., var. *transiens* Druce = *B. lyrata* Asch., var. d. *transiens* (Druce). Corner of a playing field in Tyndall's Park, Bristol, v.-c. 34, June 16, 1923. Thirteen years ago I gathered this variation on the Wellsway near Bath, being attracted by the darker yellow of the petals and the peculiar upper leaves which, instead of being merely toothed, were pinnatifid, with longish linear basal lobes, while the pods were those of *vulgaris* type. The somewhat meagre description of *transiens* in *Fl. Berks*, p. 44, suggested the name and Dr Druce accepted it. I now contribute a similar gathering from a West Gloucester locality. As stated by Druce, the plant has a stout, much-branched habit and conspicuous flowers, but its marked feature lies in the linear pinnæ of the upper leaves that exceed the terminal lobe in width. I agree that it has nothing to do with *intermedia* or with *arcuata*. Mr A. B. Jackson reported on a Wellsway example that he considered it well worthy of distinction, and in *Journ. Bot.* 208, 1916, he put it to *transiens*. No other stations appear to be on record for the West of England. As in the fruiting stage all the radical leaves have perished, I have added a few from seedlings due to flower next year.—J. W. WHITE. "As the duplication of the trivial is now adopted despite the risibility of Engler's students, we should write *Barbarea Barbarea* (L.), var. *transiens*."—DRUCE.

B. vulgaris R. Br., var. *campestris* Fries. [Ref. No. 2586.] Dry water-course between Hertford and Brickendon, Herts, June 10, 1923. —C. E. BRITTON. "Is this not nearer to the plant Mr Jackson calls var. *arcuata* than to *campestris*, in which the pedicels are not so patent? According to recent suggestions, we shall have to write *Barbarea Barbarea* (L.), var. *arcuata* (Reichb.?)."—DRUCE. "Quite characteristic of the var. *campestris* Fries. It is the most common form in Surrey and probably elsewhere."—FRASER.

Arabis hirsuta Scop. Winch Bridge, Upper Teesdale, Durham, June 19, 1908.—Leg. A. O. HUME; comm. SOUTH LOND. BOT. INST. "Quite a typical *Arabis hirsuta*."—FRASER.

Arabis. Devil's Kitchen, near Lake Idwal, Carnarvonshire, June 26, 1905.—Leg. A. O. HUME; comm. SOUTH LOND. BOT. INST.

"*Arabis hirsuta.* A more glabrescent plant than usual, the character probably caused by shade and shelter."—DRUCE.

Cardamine amara L. Orpington, Kent, May 10, 1903.—Leg. W. H. GRIFFIN; comm. SOUTH LOND. BOT. INST.

C. impatiens L. Chiddingstone, Kent, June 25, 1904.—Leg. A. O. HUME; comm. SOUTH LOND. BOT. INST.

C. bulbifera L. Near Hawkhurst, Kent, May 1, 1901.—Leg. A. O. HUME; comm. SOUTH LOND. BOT. INST.

Cochlearia danica L. Borth, Glamorgan, June 22, 1923.—L. CUMMING. "Yes, characteristic."—DRUCE. "I agree."—FRASER. Also sent from north shore, Blackpool, v.-c. 60, June 18, 1923.—J. A. WHELDON.

Sisymbrium orientale L. Waste heap, Riddy Lane, Hitchin, Herts, June 21 and July 27, 1923. In company with this species appeared in 1922 a number of other aliens, viz., *Glaucium phœniceum*, *Sisymbrium pannonicum* (which does not grow naturally here), *S. Sophia*, *Lepidium neglectum* Thellung, *Melilotus indica*, *Ambrosia trifida*, *Chenopodium album*, var. *leptophyllum* Moquin.—J. E. LITTLE.

S. Irio L. Marston, Oxon, June 1923.—G. C. DRUCE.

Bursa gallica (E. Almq.). Hanslope, Bucks, July 1923. With *Anthemis tinctoria* on the railway bank between Castlethorpe and Hanslope, Bucks, extending into Northants at Ashton. The bank is to some extent composed of clinkers, and has afforded several European species.—G. C. DRUCE.

Lepidium perfoliatum L On railway track, Galway, July 25, 1923.—D. J. EVANS. "Yes."—DRUCE. "A very singular species with di-trimorphic leaves, native of South Europe and the Orient. It is seldom introduced to France but more often to Belgium."—FRASER.

Raphanus maritimus Smith. Portishead, N. Somerset, July 1, 1923.—L. CUMMING.

Reseda alba L. St Mary's, Scilly Isles, June 1923. Established there for at least 60 years.—H. DOWNES. "Yes, a good specimen."—DRUCE.

Viola ruralis Jord. [Ref. No. 2063.] Cornfield, Blackheath, Colchester, v.-c. 19, June 31, 1923. Upper petal bluish above, sepals strongly tinged with blue. Some of the plants show a strong tendency to *V. Deseglisei*.—G. C. BROWN. "*V. variata* Jord."—DRABBLE.

Viola sp. [Ref. No. AA 242.] Near Stokenchurch, Bucks, July 1903.—G. C. DRUCE. "*V. ruralis* Jord., rather large-flowered."—DRABBLE.

Viola sp. [Ref. No. AA 224.] Frilford, Berks, June 1923.—G. C. DRUCE. "*V. variata* Jord."—DRABBLE.

V. variata Jord. Striber's Moss, N. Lancs, v.-c. 69b, June 23, 1923.—W. H. PEARSALL. "Yes, *variata.*"—DRABBLE.

V. variata Jord. [Ref. No. AA 297.] Chippenham, Cambridge, June 1923.—G. C. DRUCE. "Yes, *variata.*"—DRABBLE.

V. segetalis Jord. [Ref. No. 670.] Cultivated ground, Dolgelley, v.-c. 48, August 18, 1923.—W. C. BARTON. "Yes, *V. segetalis* Jord."—DRABBLE.

V. Kitaibeliana R. & S., var. *nana* (Godron). [Ref. No. 648.] Quenvais, Jersey, June 14, 1923. In St Brelade's Bay I found plants growing among Marram grass to the height of 8 inches, and these are indistinguishable from the plant of S.E. Europe, of which Herb. Brit. Mus. has a good series. On the sands close by the dwarfed f. *nana* occurs. On the Quenvais, even at this late date, a great number of plants from 3 to 4 inches high were many of them still in flower. These agree in all respects but their stunted growth. In exposure the plant is darker coloured and the corolla more usually purple, but there seems to be no room for doubt that the so-called variety *nana* is merely a growth form. In Herb. Brit. Mus. I have seen a cultivated specimen of considerable size grown in hort. Bournemouth by E. F. Linton from seed of the dwarf form.—W. C. BARTON.

Silene conica L. [Ref. No. AA 225.] Frilford, Berks, June and July 1923. Commander WALKER and I found it in a sandpit in the field at Frilford in 1905, where it has grown in small quantity for some years. In 1914 Miss N. LINDSAY found it in an adjoining field in abundance, but in 1922 it failed to appear in either place. This year Messrs T. G. PARRY and N. SANDWITH found it in immense quantity in the first locality. There were many acres of a lucerne field covered with it, and it afforded a charming sight.—G. C. DRUCE.

S. anglica L. Cultivated ground, Blackdown, Sussex, September 18, 1923.—R. J. BURDON.

S. Armeria L. Self-sown on the outskirts of a garden near Ledbury, Hereford, June 28, 1923.—S. H. BICKHAM.

S. italica Pers. Flowers, hort. Oxon, ex Greenhithe, July 1923.—G. C. DRUCE.

Cucubalus baccifer L. Open wood, Merton, v.-c. 28, August 1923. —F. Robinson.

Lychnis dioica × *Preslii.* [Ref. No. AA 99.] Natural hybrid, hort. Oxon, July 1923. For some years I have grown *L. Preslii* from Tantallon Castle, Haddington, where it is now destroyed by farming operations, and it has remained nearly sterile and unvarying. Two years ago *L. dioica* was put with it, and *Preslii* produced more seeds. This year this variant of *dioica* occurred. Its stems are quite as hairy as those of *dioica*, but the leaves are more shining than those of the putative parent. The flowers, too, had the tint of *Preslii*, and there seems to be some probability of the plant having the assigned parentage. I may add that Mr R. Snow has sown seeds of *L. Preslii* which have possibly been crossed with *dioica.* The seedlings in the young state show two forms, one of which suggests *dioica*, and they await further study.—G. C. Druce.

L. Preslii Sek. Hort. Oxon, July 1923, ex Tantallon Castle, Haddington.—G. C. Druce.

Cerastium vulgatum L., ? var. *serpentini* (Syme). Top of Ivinghoe Beacon, Bucks, June 1923. In June last Paul Richards sent me a *Cerastium* which he said grew in the above locality "in great abundance, and had an exceedingly large corolla, 2·3 times as large as the calyx," which he thought was near *pumilum.* The small non-rooting specimen which he sent me had something of the facies of that plant, but it was less glandular and the petals were of a different shape. I went over to Ivinghoe, a place I knew intimately in the nineties. At the Queen's Jubilee an immense bonfire was lighted on the top of the Beacon Hill, which resulted in burning a large surface of turf. The following year a large growth of *Fumaria hygrometrica* occurred, and the following season two variations of *Taraxacum* appeared. One is *lacistophyllum*, the other an undescribed member of the *Erythrosperma.* But I noticed no *Cerastium*, although I was specially searching for *pumilum* This season, however, the upper cup of turf, especially where the turf was thin, was plenteously sprinkled with a showy Chickweed, which at a distance suggested a starved *arvense.* Closer examination, however, revealed that it was neither *arvense* nor *pumilum*, but a variation of the perennial *vulgatum.* It cannot be referred to var. *alpinum* Koch (Gren.), because the leaves are not "latioribus, ovalibus," nor should it be simply named *C. vulgatum*, which was abundant in the arable fields below the Beacon and also on the lower slopes. Of our British named forms it is near my forma *macropetala*, which is a large plant with conspicuous petals from the Itchen meadows, Hampshire, etc., and Riddelsdell's *fontanum* (not of Baumg.) from the Windrush meads, near Bourton-on-the-Water. From these it differs in its condensed growth and smaller leaves, possibly only habitat conditions. The second name which may be applied to it is *serpentini* of our British authors—the *C. vulgatum*, var. *alpinum* Gren., forma *serpentini* Druce in Camb. Flora—which differs from var. *alpinum* in its leaves being narrow as in *vulgatum*. N. E. Brown in *Supp. Eng. Bot.* 40, however, for *serpentini* cites *C. Fischerianum* Ser. in DC. Prod. i., 419, 1825. Torrey & Gray (*Fl. N. Amer.* 188, 1838) put it under *C. alpinum* L. as var. *Fischerianum*. Brown also places under *serpentini* Hooker's Indian *C. Thomsoni*. For the time being (until it can be proved that our plant is identical with *Fischerianum*) it seems better not to revive that name. There is also another claimant, *i.e.*, the *C. vulgatum*, var. *grandiflorum* Fenzl in Ledeb. Fl. Ross. i., 410, 1842, which appears to be an appropriate name and one which (assuming our plant to be covered by it) might be used to designate these large-flowered forms, whether of small or large growth. It is quite clear that herbarium specimens of var. *alpinum* rarely agree with Grenier's description so far as the leaf characters go. For the time being, therefore, I refer this Bucks plant to var. *serpentini* (Boswell Syme in *Rep. B.E.C.* 11, 1876, with a meagre description as a var. of *C. triviale* Link), which was based on some Balta Sound specimens found by Craig Christie. A similar plant was found at Ollaberry by Beeby, and others have been collected in the Isle of Stroma. The Ivinghoe specimens have shorter capsules than the specimens I gathered at Balta and Clibberswick in Shetland, where it seems to merge into my var. or forma *lucens*, in which the size of the petals varies. I ought to say that the specimens now sent do not well represent the size of the petals, which shrink greatly in drying under moderate pressure.—G. C. DRUCE.

C. pumilum Curt. Stanton St John's, Oxon, May 1923; Fursy Lynam, near Oxford, April 1923, in great abundance in a new locality. This species varies greatly in quantity year by year. Although the latter locality has been searched many years, this is the first time in which it has been noticed So, too, it suddenly appeared near Woodstock in great quantity, but the next two years hardly yielded a specimen.—G. C. DRUCE.

C. tetrandrum Curt. Borth, Glamorgan, June 18, 1923.—L. CUMMING. "Yes."—DRUCE.

Stellaria uliginosa Murr. Borth, Glamorgan, June 21, 1923.—L. CUMMING.

Arenaria balearica L. On old wall, Clapham, v.-c. 64, at 860 feet, June 20, 1923. Name confirmed by Dr Druce.—J. CRYER. "Yes; it is very local in Mallorca, but more abundant on the west side of Corsica."—DRUCE

Spergula sativa Boenn. [Ref. No. 671.] Cultivated ground, Dolgelley, v.-c. 48, August 18, 1923.—W. C. BARTON.

Spergularia diandra Boiss., var. *atheniensis* H. & S. [Ref. No 650.] Roadside gravel, Bel Royal, Jersey, June 13, 1923. In considerable quantity on the gravel of the new sea front, which was at one time thought to have exterminated it. Also on walls, etc., at St Aubyn's.—W. C. BARTON. "Yes; it still persists despite the road alterations along the coast from St Helier's to St Aubyn's, where I found it in 1906."—DRUCE.

Montia fontana L., var. *intermedia* Druce in Camb. Brit. Fl. [Ref. No. 672.] Dolgelley, Merioneth, August 15, 1923.—W. C. BARTON. "Yes; it should be found in the adjoining counties."—DRUCE.

Elatine hexandra DC. Pond on Worplesdon Common, Surrey, August 19, 1923. This is apparently only the type, though most of the seeds are slightly curved, while most of the Floras give them as being straight. The flowers are nearly all long-stalked, occasionally one or two being sessile. The specimens we get at Cutmill Pond, near Putenham, are of a similar character. I do not think it can be var. *sessilis* Druce.—W. BIDDISCOMBE

Malva moschata L., var. *laciniata* Lej. [Ref. No. 2462.] Artificial grass field, at 60 feet, Salis, Loch of Boardhouse, Birsay, Mainland, Orkney, August 27, 1923. Not native, a weed of cultivation. Common. Plants in full flower, with corolla and anthers pinkish-mauve. H. H. JOHNSTON. "My example does not show the lower leaves. Lejeune requires that all leaves, not only the upper, should be palmatisect for his *laciniata*. Was this so?"—SALMON.

Linum angustifolium Huds. Grassland, Middlewick, E. Derryland, N. Essex, June 17, 1923. In great abundance in one spot of heathy grassland which has been out of cultivation 30 or 40 years. Previously only seen in very small quantity.—G. C. BROWN.

Geranium rotundifolium L. St Vincent Rocks, Clifton, W. Gloucester, May 26, 1923.—L. CUMMING. Also from hedgebank, near Defford Common, Worcester, June 14, 1923.—AGATHA WILKINSON.

G. purpureum Vill. [Ref. No. 688.]. Among gorse, Quenvais, Jersey, June 12, 1923. The true *purpureum* Vill., em. Jordan. In the shade of a wood at St Peter's the plant was as green as *G. Robertianum*, under similar conditions.—W. C. BARTON.

Oxalis corniculata L. Corris railway track, Fridd Gate, Merioneth, September 3, 1923.—W. C. BARTON.

Ulex europaeus × *U. Gallii*? The Carnanes, Isle of Man, v.-c. 71, September 23, 1923.—A. WILSON and J. A. WHELDON. "Gathered from a single bush growing on the heath which was covered with *U.*

Gallii in bloom, and surrounded by a fence of *U. europaeus*. Attention was called to the supposed hybrid by the habit and colour of the herbage, and also by the flowers being exactly those of *U. europaeus*, and we thought it singular to see this flowering so richly in September. On closer examination, it was seen that the sepals and bracts had the characters of *U. Gallii*. whilst the grooving of the primary spines was intermediate between the two. The old flowers had a tendency to drop off easily, as though sterile, but the pollen grains seemed to be plump and apparently normal. The striking difference in the colour of the fresh flowers is not noticeable in the dry specimens."—J. A. Wheldon. "This seems correct. I described this hybrid in *Report* 17, 1920, from Parkstone, Isle of Wight, and I saw it previously at Millook, Cornwall."—Druce. "The curved wings of the flower, longer than keel, the adpressed pubescence of the calyx and the rigid primary spines suggest *U. Gallii*; while the length of the primary spines and their numerous furrows suggest *U. europaeus*. The flowers are intermediate in size between the putative parents. I take the short-spined piece to be *U. nanus*."—Fraser.

Medicago arabica Huds. Waste ground, Barry, Glamorgan, July 1923.—R. L. Smith. "Yes."—Druce.

M. minima Desr. Waste ground, Barry, Glamorgan, v.-c. 41, July 1923. Quite a number of plants appear every year, and they all produce plenty of fruit. If the habitat were not so close to the local docks, this plant could almost be deemed native.—R. L. Smith. "I agree. Glamorgan is an anciently recorded county for this rare species."—Fraser. Also from St Ouen's Bay, Jersey, June 14, 1923. Fine and plentiful on the sands. One plant fully covered a sheet 16 x 10 inches. In many cases the seed-pod is still attached to the root.—W. C Barton.

Trifolium fragiferum L. Brinklow, Warwick, July 16, 1923.—L. Cumming.

T. strictum L. La Pulente, Jersey, June 17, 1923. Plentiful in a hayfield and growing to the height of the mowing grass; a contrast to the dwarfed coast plant.—W. C. Barton. "One specimen is luxuriant *T. glomeratum*."—I. M. Roper. Also sent from near Corbière, Jersey, June 1923.—G. C. Druce.

Astragalus danicus Retz. Westwell, Oxon, June 1923.—G. C. Druce.

Ornithopus roseus Dufour. Pyrford, Surrey, November 1923.—Coll. Lady Davy; comm. G. C. Druce.

O. pinnatus Druce. Scilly Isles, v.-c. 1, June 1923.—HAROLD DOWNES. "It is pleasing to know that this rare plant still survives in the Scilly Islands."—DRUCE.

Vicia Cracca L., forma. West Chiltington Common, W. Sussex, August 1923.—A. WEBSTER. "Yes; *Vicia Cracca* L."—MARQUAND.

V. bithynica L. Cultivated ground, Scilly Isles, June 1923.—HAROLD DOWNES.

V. sativa L., ? var. *obovata* (Ser.) Gaudin. [Ref. No. AA 238.] Frilford, Berks, June 1923. This plant must go to this, I think, rather than to var. *cordata* Wulf. Gaudin (*Fl. Helv.* iv., 410) describes it as "*V. sativa obovata* Ser. *V.* foliolis villosis obovato cuneatis obcordatis v. late retusis cuspidatis."—G. C. DRUCE.

V. angustifolia Reich., var. *Garlandii* Druce. Common at St Catherine's and on the Quenvais, June 1923. The members of the Society on their visit to Jersey were much struck with its beauty.—G. C. DRUCE.

Lathyrus sylvestris L. Thicket, Shirehampton, near Bristol, W. Gloucester, August 4, 1923.—IDA M. ROPER. "Yes, the narrow-leaved plant."—DRUCE.

L. Aphaca L. Waste ground, Barry, Glamorgan, July 1923. One clump only, which will probably not appear again.—R. L. SMITH. "I agree. Good specimens of flowers and fruit." FRASER.

Prunus domestica × *insititia*. [Ref. No. H 2.] Lane near Purwell Mill, Hitchin, Herts, April 1 and June 10, 1923. For notes, see *W.E.C. Report* 211, 1922. No fruit was produced in 1923. Calyx-limb ciliate on the margin. Anthers yellow, tinged with orange on the lines of suture; the colour afterwards runs.—J. E. LITTLE. "There is no doubt of *P. domestica* parent. The flowers are often in pairs and the peduncles are downy, showing the *P. insititia* parent's influence. It might be a garden escape, for garden plums are very heterozygous."—FRASER.

P. insititia L. [Ref. No. H 20.] Hedgerow, near Ducklands, Hitchin, Herts, March 30 and August 20, 1923. Bush about 8 feet, but cut down and laid in the hedge, so that the leaves now sent are from apoblastic shoots. On the shoots of 1922 strong pubescence remains. Flowers small, 16-18 mm. in diameter, solitary, in pairs, or in threes. Peduncles with abundant short pubescence. Calyx green, glabrous above, with short pubescence below. Anthers a pure yellow, with no admixture of orange. No fruit in 1923.—J. E. LITTLE. "The brown bark, twin flowers, few spiny straight shoots and medium rigid flowers, and their conspicuously pubescent peduncles, all point to *P. insititia*, but the large leaves and their moderately hairy midribs suggest the influence of *P. domestica*. Might it not be a degenerate garden plum?" —FRASER.

Spiraea salicifolia L. Grown as hedges in abundance about Llanuwchllyn, v.-c. 48, August 9, 1923. These specimens were from the south side of Bala Lake.—H. J. RIDDELSDELL.

Rubus plicatus W. & N. Maentwrog, Merioneth, September 7, 1922.—W. C. BARTON. "Correct."—RIDDELSDELL.

R. plicatus W. & N., var. *Bertramii* G. Braun, or near it. Festiniog Valley, v.-c. 48, September 13, 1922.—W. C. BARTON. "It is evident from Rogers' *Handbook*, p. 22, that there exist various interpretations of this form. The present specimens, like most of those we have found in N. Wales, are far from extreme examples of *Bertramii*."—BARTON & RIDDELSDELL. Also from above Talsarnau, Merioneth, September 8, 1922.—W. C. BARTON.

R. nitidus W. & N. Banstead Heath, v.-c. 17, July 12, 1923.—BARTON & RIDDELSDELL.

R. opacus Focke. Drove on the peat-moor near Shapwick, North Somerset, September 8, 1923.—J. W. WHITE. "M. Sudre does not admit true *opacus* as British, but refers the Sussex plant, with which this is presumably identical, to var. *glandulifer* Sudre. See *Mon.* p. 19."—DRUCE. "Yes, a well-known locality."—RIDDELSDELL.

R. caresiensis Sudre, var. *integribasis* Rogers. In quantity all around Portmadoc, v.-c. 48 and 49, August and September 1922. [Barton's Ref. No. 1003.]; also seen in 1923 near Dolgelley, v.-c. 48.—BARTON & RIDDELSDELL. "As it is inadvisable to have two plants bearing the name *integribasis*, would it not be well to call this var. *Rogersiana*?"—DRUCE.

R. latifolius Bab. Hedges, south of Bala Lake, near Llanuwchllyn (styles and stamens subequal); also Talsarnau, v.-c. 48, August 1923. Very much like *R. gratus*, which Rogers records (coll Ley) from the former neighbourhood. In quantity at Talsarnau. I have also seen a specimen this year from a new locality in Anglesey (H.J.R.)—BARTON & RIDDELSDELL.

R. castrensis W.-Dod. [Ref. No. 604.] Harthill, v. c. 58, August 1923. Stem nearly prostrate, not at all high arching.—H. J. RIDDELSDELL.

R. carpinifolius W. & N. [Ref. No. 2070.] Abundant in Middlewick, Colchester, v.-c. 19, July 22, 1923. Mr Riddelsdell writes on my 1922 gathering [Ref. No. 1971.] "Note here the hair drops off the stem as it develops. It is not typical though. The 7 nate leaves are very interesting. I have no doubt it is to be placed here. N.C.R. for v.-c. 19.' I have included a 7-nate leaf with every sheet.--G. C. BROWN. "Correct. N.C.R. for v.-c. 19."—RIDDELSDELL. Also [Ref. No. 606.] from Denham, Bucks, July 10, 1923.—H. J. RIDDELSDELL.

R. incurvatus Bab. [Ref. No. 607.] The form referred to on p 27 of Rogers' *Handbook.* Cross o' Hands, Hulland, v.-c. 57, August 20, 1923.—H. J. RIDDELSDELL.

R. argenteus W. & N. Banstead Heath, Surrey, July 13, 1923. The usual highly glandular form of the species, which differs greatly from that of West England and Wales.—BARTON & RIDDELSDELL.

R. durescens W. R. Linton. [Ref. Nos. 416 and 417.] In great quantity at and near the Cross o' Hands, Hulland Ward, v.-c. 57, August 20, 1923. The panicle is usually small, but sometimes grows to enormous size [Ref. No. 416]. Sudre guesses *R. durescens* to be a hybrid between *R. calvatus* and *R. Questierii*; the latter, however, has never been recorded yet from Derbyshire. *R. durescens* is more likely to be an independent local variation arrived at by other means than hybridisation.—H. J. RIDDELSDELL.

R. Bakeri F. A. Lees. [Ref. No. 620.] Harthill, v.-c. 58, August 10, 1923. This is not typical *Bakeri*, but is nearest that species.—H. J. RIDDELSDELL.

R. nemoralis P. J. Muell., var. *Silurum* Ley. [Ref. Nos. 623 and 624.] Llangammarch, v.-c. 42, July 31 and August 1, 1923. In wonderful luxuriance and beauty. Also seen at Cwm Einion, v.-c. 46; Dolgelley neighbourhood, v.-c. 48, and elsewhere.—BARTON & RIDDELSDELL.

R. nemoralis P. J. Muell., var. *glabratus* Bab. [Ref. No. 621.] Riggs Wood, Sellack, v. c. 36, July 26, 1923.—H. J. RIDDELSDELL.

R. nemoralis P. J. Muell., var. *cornubiensis* Rogers MS. Perranzabuloe, v.-c. 1, August 20, 1923.—Coll. F. RILSTONE; comm. H. J. RIDDELSDELL.

R. Lindebergii P. J. Muell. [Ref. No. 634.] Road from Llangammarch to Llanwrtyd, v.-c. 42, July 31, 1923. Also in woods below Llangammarch in company with *R. hirtifolius*, *Lejeunei*, *Bertramii*, *pseudohemistemon*, *Silurum*, *dasyphyllus*, etc.—H. J. RIDDELSDELL.

R. ramosus Briggs. [Ref. No. 245.] Field border, near Perranzabuloe Church, v.-c. 1, August 1923.—F. Rilstone. "Matches Cornish specimens named by Rogers, but differs from the Surrey plant."—Barton. "Correctly named."—Riddelsdell. "There are two plants bearing the name *R. ramosus.* According to M. Sudre, *l.c.* p. 25, Briggs' name is antedated by *R. clethrophilus* Genev. Ess. 187, 1869."—Druce.

R. thyrsoideus Wimm. [Ref. No. 608.] Bloxham to Broughton, v.-c. 23, September 27, 1923.—H. J. Riddelsdell. "Sudre, p. 92, says the plant of Rogers is the restricted *R. candicans* Weihe."—Druce.

R. rusticanus × ?. Park Road, Woking, Surrey, August 23, 1923.—W. Biddiscombe. "The stem certainly suggests other influence than *rusticanus*; but the leaves and panicle do not. I should hesitate to say anything about this unless I saw it growing."—Riddelsdell.

R. hesperius Rogers. [Ref. No. 1002, W C. B.] One locality in quantity, Tremadoc, v.-c. 49, August and September 1922. Not exactly the Irish plant, but nearer it than is the Bangor plant placed here by Rogers.—Barton & Riddelsdell.

R. Sprengelii Weihe. Roadside, Hulland, v.-c. 57, August 20, 1923.—H. J. Riddelsdell.

R. leucostachys Sm., var. *leucanthemus* P. J. Muell. ? Walton Heath and Banstead Heath, Surrey, in great abundance, July 13, 1923.—Barton & Riddelsdell.

R. criniger Linton. [Ref. No. 1986.] Lane, Grimes Dyke, Stanway, N. Essex, July 19, 1923. Mr Riddelsdell says of this *in litt.*, November 1922—"This is certainly the eastern counties form of *R. criniger.*"—G. C. Brown. "Yes. I have specimen from W. R. Linton himself with terminal leaflet cordate-based, ovate-acuminate, rather gradually narrowed to long point."—Barton. "Yes, small in all its parts and with 3-nate leaves, obovate rather than ovate. Otherwise quite typical, and thus differing from the large majority of East Anglican bushes put under *R. criniger.*"—Riddelsdell.

R. cinerosus Rogers. [Ref. No. 713, H. J. R.] Eltham Common, W. Kent, July 11, 1923. Collected and distributed by both of us.—Barton & Riddelsdell.

R. rudis W. & N. Walton Heath, v.-c. 17, July 12, 1923. It seems to differ from type almost wholly in size of flowers, leaves, and thorns. Flowers 1¼ inches across. Sepals rising in young fruit.—

BARTON & RIDDELSDELL. Also from near Portmadoc, v.-c. 49, September 5, 1922. An aberrant form of this species, with strongly rising sepals. yellowish stem, etc., but it can be placed under no other of our named species. The first record for Wales.—BARTON & RIDDELSDELL.

R. rudis W. & N. [Ref. No. 1001.] Morfa Bychan Road, near Portmadoc, Carnarvon, v.-c. 49, November 5, 1923.—BARTON & RIDDELSDELL.

R. oigocladus Rogers (not Muell. & Lefèv.), *i.e.*, *R. mucronifer* Sud., sub-sp. *cenomanensis* Sud., for Sudre's authentic specimen of *cenomanensis* is practically identical with our *oigocladus.* [Ref. No. 777, H. J. R.; 1004, W. C. B.] Walton Heath, v.-c. 17, July 1923. Sepals rising after fall of petals; armature of stem much more sub-Koehlerian than in type. But undoubtedly a form of *cenomanensis.*—BARTON & RIDDELSDELL. "The name is already occupied. Sudre names the British plant *R. cenomanensis.*"—DRUCE.

R. Babingtonii Bell-Salt. [Ref. No. 763, H. J. R.] Big Wood, Wormbridge, v.-c. 36, July 30, 1923.—BARTON & RIDDELSDELL.

R. ericetorum Lefèv. [Ref. No. 904.] Layer Road, near Colchester, N. Essex, July 29, 1923. On first seeing this plant Mr Rogers remarked "not quite my idea of *ericetorum*, it cannot, I think, go under *R. Babingtonii.*" On a subsequent gathering he reported, "apparently best under *ericetorum.*" Mr Riddelsdell agreed.—G. C. BROWN. "Stem not sharp angled. Prickles not long. Leaves only 3-nate. Terminal leaflet may pass, but not typical. Rachis lacks long-stalked glands, and glandular bristles. My stem pieces poor, lack longer prickles and longer stalked glands. Fruit appears ill-formed, some mildewed"—BARTON. "I confess to great difficulty in assigning this to *ericetorum*, and I said so to Rogers in 1916. He replied 'not quite my idea of *ericetorum*; it cannot, I think, go under *R. Babingtonii.* Apparently best under *ericetorum*, possibly as a hybrid.' Eventually he did not enter it for v.-c. 19 in his MS. record book; and we cannot, in my opinion, maintain the record for *ericetorum* in N. Essex. The present plant is *near* it, of course, but not it."—RIDDELSDELL.

R. ericetorum Lefèv., var. *sertiflorus* (P. J. Muell.). [Ref. No. 752.] Sellack, v.-c. 36. July 26, 1923.—H. J. RIDDELSDELL.

R. cavatifolius P. J. Muell. [Ref. No. 751.] Troy Wood, Monmouth, v. c. 35, July 28, 1923. Panicles small.—BARTON & RIDDELSDELL.

R. fuscus W. & N., var. *macrostachys* (P. J. Muell.). [Ref. No. 2068.] Lane, Grimes Dyke, Llanway, N. Essex, July 19, 1923. Mr Riddelsdell said of my original gathering from this bush [Ref. No. 1524.]:—"Yes, I should be disposed to say *R. macrostachys*, though I have no specimens which show this strictly pyramidal panicle (or anything like it), yet in this point your plant agrees with the description of Rogers' *Handbook*. Your leaflets suggest white felt."—G. C. BROWN. "I so named a plant from this locality collected by Brown in 1919 [Ref. No. 1524.], but this is not the same form. It has not the conspicuously grey-felted underleaf of 1524, nor the almost entirely reflexed sepals, nor quite the same rachis clothing, etc. I should be disposed to say that No. 2068 (very poor material on my sheet!) is perhaps a hybrid of 1524 × ? It should go under *fuscus* aggr. somehow, but I cannot call it *macrostachys*. In some respects it reminds me strongly of a Bristol plant about which there was much talk many years ago, and which was finally consigned to *fuscus*."—RIDDELSDELL.

R. pallidus W. & N. Denham, v.-c. 24, July 10, 1923.—BARTON & RIDDELSDELL.

R. botryeros Focke. [Ref. No. 803, H. J. R.] Linton Wood, v.-c. 36, July 29, 1923.—BARTON & RIDDELSDELL.

R. longithyrsiger Bab. [Ref. No. 799, H. J. R.] Queen's Wood, v.-c. 34, July 25, 1923.—BARTON & RIDDELSDELL.

R. rosaceus W. & N. [Ref. No. 808, H. J. R.] Putney Heath, v.-c. 17, July 13, 1923.—BARTON & RIDDELSDELL.

R. rosaceus W. & N., var. *Purchasianus* Rogers. [Ref. No. 815, H. J. R.] Sellack, v.-c. 36, July 26, 1923. Also from Troy Wood, Monmouth, July 28, 1923. [Ref. No. 814, H. J. R.] Distributed last year from Troy Wood under the erroneous name of *R. uncinatus*.—BARTON & RIDDELSDELL.

R. Powellii Rogers. [Ref. No. 186.] Field border, Lambourne Hill, near Perranporth, v.-c. 1, August 1923.—F. RILSTONE. "My stem pieces rubbed and insufficient. Leaves are not quite glabrous above nor very narrow. Note bristles on rachis. Since writing above I have seen better material. Correctly named."—BARTON. "Yes, though not quite typical."—RIDDELSDELL.

R. divexiramus P. J. Muell. [Ref. No. 831.] Wyaston Leys, near Monmouth, v.-c. 35, September 19, 1923.—H. J. RIDDELSDELL. "Quite good."—BARTON.

R. acutifrons Ley. [Ref. Nos. 840 and 841, H. J. R.] Big Wood, Wormbridge, v.-c. 36, July 30, 1923.—BARTON & RIDDELSDELL.

R. acutifrons Ley, var. *amplifrons* Ley. [Ref. No. 842, H. J. R.]

Big Wood, Wormbridge, v.-c. 36, July 30, 1923.—BARTON & RIDDELSDELL.

R. corylifolius Sm., aggr.? [Ref. No. 2069.] Middlewick, Colchester, N. Essex, July 22, 1923. Petals pale pink, and stamens exceeding styles, sepals patent in flower, then rising.—G. C. BROWN. "Only this in a very aggregate sense. In so many points does it agree with *R. Bucknalli* that it may quite likely fall under that species. But the outline of panicle, though approached by some Herefordshire *Bucknalli*, and the sepal clothing, are very different from the Glostershire plant. I do not know what Mr White would say about my suggestion."—RIDDELSDELL.

Potentilla fruticosa L. Abundant in one field in a valley, Ballyvaughan, Co. Clare, August 16, 1923.—D. J. EVANS. "I agree. My specimen was a good one, indicating plenty of material."—FRASER.

P. inclinata Vill.? Waste ground, Leckwith, Glamorgan, July 1923. These plants appeared for the first time this year on waste ground adjoining some allotments. A very puzzling species; in fact these could be referred to *P. intermedia* L.—R. L. SMITH.

P. intermedia L. Alien. On waste grassy places, Silloth, Cumberland, August 1923. Despite the absence of the radical leaves, I hope this is correctly named.—G. C. DRUCE.

Alchemilla glomerulans Buser. Orig.: Cairngorms, 1922; hort. Reigate, August 21, 1923. These specimens have become much less hairy in the garden, perhaps owing to the change of soil or to the drop of about 2500 feet of altitude.—C. E. SALMON.

Acaena laevigata Ait. Orig.: Levenhall, Scotland; cult. Shipley, September 1923. Named at Kew.—J. CRYER. "An introduction from the region of Magellan. The typical form with glabrous leaves. I have seen it from the Andes, with the leaves densely silky on both sides. From other parts of the west of S. America the leaves are more or less hairy, with long adpressed hairs."—FRASER.

Poterium polygamum W. & K. Nunckley Hill, Leicester, v.-c. 59a, August 1916.—Coll. A. H. HORWOOD; comm. NATIONAL MUSEUM OF WALES.

Rosa sphaeroidea Ripart. [Ref. No. AA 407.] Near Stow Wood, Oxon, July 1923. Named by Col. A. H. Wolley-Dod who says "almost equally near var. *leiostyla* Rouy."—G. C. DRUCE. "The broadly ovoid though hardly subglobose fruit and spreading sepals might do for *sphaeroidea*, but in my specimen one of the four peduncles is distinctly hispid which, combined with the shape and spacing of the leaflets, indicates the Andegavenses. It is quite good *Lemaitrei* Rip. by its glabrous styles, and I now call that *R. canina* var. *verticillacantha*, f. *Lemaitrei*."—WOLLEY-DOD.

R. canina L., var. *globularis* Rouy. [Ref. No. AA 403]. Horsepath, Oxon, July 1923. Named by Col. A. H. Wolley-Dod.—G. C. DRUCE. "I do not think this is biserrate enough for the Transitoriae and would label it v. *sphaerica*."—WOLLEY-DOD.

R. dumetorum Thuill., var. *semiglabra* (Ripart)? [Ref. No. 2067.] Middlewick, Colchester, N. Essex, June 17 and July 22, 1923. Petals pink, sepals patent in fruit. I think best referred to *semiglabra* rather than *urbica*, as the pubescence is, so far as I can ascertain, almost entirely confined to midribs of leaves and is not copious even there. Styles hispid.—G. C. BROWN. "So I should name it. It is a very variable plant, characterised mainly by its midribs alone being pubescent. I call it *R. dumetorum*, var. *typica*, f. *semiglabra*." —WOLLEY-DOD.

R. glauca Vill., var. *transiens* = *R. Reuteri* Godet, var. *transiens*. Between Sibford and Tadmarton, Oxon, August 1923. A very rare rose in the county, where all the suberistate ones are local. Kindly named by Col. A. H. Wolley-Dod.—G. C. DRUCE. "Correct."—WOLLEY-DOD.

R. tomentella Lem. [Ref. No. AA 402.] Horsepath, Oxon, July 1923. Col. A. H. Wolley-Dod says—"Leaflets without subfoliar glands. I usually refer such plants to var. *Carionii* (D. & G.)."—G. C. DRUCE. "So I should label it, or, by my latest nomenclature, *R. tomentella*, var. *typica*, f. *Carionii*. It is exactly *R. tomentella* without subfoliar glands."—WOLLEY-DOD.

R. tomentosa Sm., var. *pseudocuspidata* Crep. [Ref. No. 308.] Chinnor Hill, Oxon, July 1903.—G. C. DRUCE. "Too young to determine its group, but I think it is *R. pseudocuspidata*."—WOLLEY-DOD.

R. tomentosa Sm., agg. [Ref. No. AA 309.] Kingston, Oxon, July 1923.—G. C. DRUCE. "A very interesting plant. It is exactly my new var. *Brittoni* (Scabriusculae), not yet published. It is characterised by its unarmed stem and very large, very coarsely biserrate leaflets, with other minor characters. It is, I believe, the same as Boulenger's *R. britannica* (*Journ. Bot.* 185, 1920), but that name cannot stand, having been used before. I have only seen it from Surrey and W. Kent."—WOLLEY-DOD.

R. spinosissima, var. *rubella* W.-Dod. [Ref. No. AA 199.] St Ouen's, Jersey, June 1923.—G. C. DRUCE. "I doubt it. Red fruit is the leading character, and this is only in bud. The prickles are like it, but not the smooth peduncles and fruit. I call it f. *rosea* from its rose flowers."—WOLLEY-DOD.

Pyrus minima Ley. Craig Cille, v.-c. 42. July 6, 1923. Inflorescence seen only in scanty quantity.—H. J. RIDDELSDELL. "I quite agree that this is Augustin Ley's species but regret that no berries are present. Few of the species of *Pyrus* fruit every year, so the absence of berries is explicable."—FRASER.

P. germanica Hook. f. Near St Rozel, Jersey, June, 1923.—G. C. DRUCE.

Amelanchier floridus. Wood near Midhurst, W. Sussex, June 21, 1923.—A. WEBSTER. "Probably either planted or bird sown."—MARQUAND.

Cotoneaster bascilaris L. Un-named Slinfold, W. Sussex, August 3, 1923.—A. WEBSTER "An alien in this country."—MARQUAND.

Tillaea muscosa L. Dry sand, Stepe Heath, near Corfe, Dorset, June 1923.—W. BIDDISCOMBE. "Yes."—MARQUAND.

Drosera longifolia L. Meathop Moss, Westmorland. at 35 feet, September 7, 1923.—A. WILSON.

Callitriche intermedia G. F. Hoffmann. [Ref. No. 687.] Side stream of River Wnion, Dolgelley, Merioneth, September 16, 1923.—W. C. BARTON.

Lythrum Hyssopifolia L. St Catherine's Bay, Jersey, June 15, 1923.—W. C. BARTON.

Epilobium obscurum Schreb., f. *strictifolium.* Nunckley Hill, Leicester, August 1916.—Coll. A. R. HORWOOD; comm. NATIONAL MUSEUM OF WALES.

Physospermum cornubiense DC. Buckinghamshire, September 3, 1923.—W. R. SHERRIN and C. E. SALMON. "Yes; now known as *Danaa cornubiense* Burnat, from the locality near Burnham Beeches—a most interesting outlier. In the forthcoming Flora of the county I give evidence to show that it was grown by the Duchess of Portland at Bulstrode about 1790."—DRUCE.

Bupleurum falcatum L. Hedgebanks, Norton Edgar, Essex, August 1923.—F. ROBINSON.

B. aristatum Bartl. Quenvais, Jersey, June 14, 1923.—W. C. Barton. "I agree. More common in the Channel Islands than in England."—Fraser.

Carum verticillatum Koch. Near Woking, Surrey, July 10, 1923.—C. E. Salmon.

C. segetum Benth. & Hook. f. Winter leaves, Wilbury Hill, Hitchin, Herts, February 23, 1923. For notes see *W.E.C. Report* 496, 1914.—J. E. Little.

C. Bulbocastanum Koch. Wilbury, Herts, June 1923.—G. C. Druce.

Sison Amomum L. Roadside, Elmbridge, Worcester, August 4, 1923.—Agatha Wilkinson.

Oenanthe fistulosa L. Sedgemoor, Somerset, August 28, 1923.—Agatha Wilkinson.

Silaus flavescens Bernh. = *S. pratensis* Bess. Field, Elmbridge, Worcester, August 3, 1923.—Agatha Wilkinson.

Pastinaca sativa Benth. & Hook. Bascote Heath, Warwickshire, July 19, 1923. I gathered this plant and venture to send it because it is the only locality in which I have seen it apparently wild. There were more than 120 plants growing along a hedge in a field with no appearance of cultivation except corn, otherwise there were solitary plants only.—L. Cumming.

Conium maculatum L. Brinklow, Warwick, July 16, 1923.—L. Cumming. "The fruit might have been more advanced to advantage, but its shape and ridges are discernible, while the leaves and the smooth spotted stem show it to be correct."—Fraser.

Hedera Helix L. A large bush on rocks, Capler Wood, near Fownhope, Hereford, June 1920.—Coll. Miss E. Armitage; comm. S. H. Bickham. "This comes under the plant I named var. *borealis* which is found in Skye, and also in Surrey. The southern form, as found in Jersey and Guernsey, has much broader leaves. This I met with in Mallorca in the Balearic Isles this year."—Druce.

Galium. [Ref. No. 2619.] Walton Downs, Surrey, August 11, 1923.—C. E. Britton. See note under Ref. No. 2606.

Galium. [Ref. No. 2608.] Headley Heath, Surrey, August 5, 1923.—C. E. Britton. See note under Ref. No. 2606.

Galium. [Ref. No. 2604.] Walton Downs, Surrey, August 5, 1923. Flowers yellow.—C. E. BRITTON. "I would suggest that this is a hybrid, namely, *G. asperum* × *cruciatum*, otherwise *G. cruciatum* × *sylvestre*. The form of the cymes, the ciliate, aristate leaves, and the stems, glabrous above and pubescent below, are those of *G. asperum*. The stronger stems, broader leaves, and yellow flowers are those of *G. cruciatum*. The plant is altogether different in appearance from that of *G. Mollugo* × *verum*."—FRASER.

G. Mollugo L., agg. [Ref. No. 2606.] Roadside bank near Walton Downs, Surrey, August 5, 1923.—C. E. BRITTON. "Mr Britton has sent an instructive series of this polymorphic plant from Surrey. The closely related 2606 and 2619, with large open panicles, I put to *G. elatum* Thuill.; 2604, apart from its yellow flowers, is what Herr J. Freyn called type *G. Mollugo*; 2608 and 2619 are between this and *elatum*, perhaps better placed with the latter."—DRUCE. "This appears to me to be *G. Mollugo* L., var. *insubricum* Gaud. The leaves are too small for the type, and the divaricate cymes are not sufficiently erect for *G. erectum* Huds. The spreading branches of the cymes also point to var *imbricatum*."—FRASER.

G. Mollugo L., var. *Bakeri* Syme. Waste ground, Fazackerley S. Lancs, July 29, 1923.—J. A. WHELDON. "This plant is not *G. Bakeri*. The flowers are too small and too numerous for that var."—SHERRIN. "This is not my idea of *Bakeri*; the flowers should be larger, the shape of leaves more *erectum*-like, etc."—SALMON. "Are not the leaves more like those of *elatum*?"—DRUCE.

G. Mollugo × *verum*. [Ref. No. 2591.] Between Ashstead and Headley, Surrey, July 22, 1923.—C. E. BRITTON. "Yes."—DRUCE. "This agrees entirely with my gathering of *Galium Mollugo* × *verum*." —FRASER.

G. pumilum Murr. [Ref. No. AA 300.] Pool bottom, Oxon, June 1923.—G. C. DRUCE

G. palustre L. Dolgelley, Merioneth, August 6, 1923 [Ref. No. 674], and August 15, 1923 [Ref. No. 675.]—W. C. BARTON. "I should put these to var. *lanceolatum* Uechtritz."—DRUCE. "I agree." —FRASER.

G. palustre L [Ref. No. 2629.] Westend Common, Esher, Surrey, August 19, 1923.—C. E. BRITTON. "Approaches *Witheringii*." —DRUCE.

G. palustre L. [Ref. No. 2628.] Ditch near the Wey, Send, Surrey, August 17, 1923.—C. E. BRITTON. "This is very near to *elongatum* Presl, and may perhaps go to it."—DRUCE.

Valeriana dentata Poll., var. *mixta* (Dufr.). [Ref. No. AA 206.] Charlbury, Oxon, June 1923.—G. C. Druce.

Anthemis sp. [Ref. No. AA 160.] Near Fishguard, Pembroke, April 1923. Named at Kew, *A. macrantha* Willd.—G. C. Druce

Chrysanthemum Leucanthemum L., var. [Ref. No. AA 251.] Charlbury, Oxon, July 1923.—G. C. Druce.

Artemisia Dracunculus L. [Ref. No. 2632.] Roadside bank near Seaford, Sussex, September 1, 1923.—C. E. Britton. "Yes, the well-known Tarragon of European origin."—Druce. "This plant came originally from Northern Asia. In gardens it seldom or never flowers, but evidently the poorer garden soil in the wild state causes it to develop flower-heads. Roots get cast out of gardens and grow. It behaves exactly in this way in France."—Fraser.

Senecio Jacobaea L, var. *discoideus* L. = *S. flosculosus* Jord. On grass lands near the sea, Barna, Co. Galway, August 29, 1923.—D. J. Evans.

S. aquaticus Huds., var. *pennatifidus* G. & G. [Ref. No. 682.] Near Llyfnant Valley, Montgomery, August 13, 1923.—W. C. Barton.

Saussurea alpina DC. Usually an alpine plant in Britain, but there is a fine colony of it on low cliffs about 20 feet above sea-level near Scrabster, Caithness, whence these specimens were gathered in July 1923 and sent to me by Mr Lindsay.—G. C. Druce.

Centaurea nigra L., var. [Ref. No. AA 316.] Wood Perry, Oxon, September 1923.—G. C. Druce.

C. Scabiosa L., forma. [Ref. No. AA 302.] Frilford, Berks, July 1923.—G. C. Druce.

C. Scabiosa L., forma *dumetorum* Beck. [Ref. No. AA 398.] Stow Wood, Oxon, July 1923.—G. C. Druce.

C. nemoralis Jord. Fazackerley, S. Lancs, August 1, 1923.—J. A. Wheldon.

C. ——? Kirkby, S. Lancs, July 28, 1923.—J. A. Wheldon.

C. obscura Jord. Orrell, S. Lancs, July 20, 1923.—J. A. Wheldon. Also from the Carnanes, I.O.M., September 18, 1923.—A. Wilson & J. A. Wheldon.

C. nemoralis Jord., var. *minima* C. E. B. [Ref. No. 2631.] Downs by the sea, between Cuckmere Haven and Birling Gap, Sussex, September 1, 1923.—C. E. BRITTON.

C. surrejana C. E. B. [Ref. No. 2617.] Epsom Downs, Surrey, August 11, 1923.—C. E. BRITTON.

C. nemoralis Jord., var. *subintegra* C. E. B. [Ref. No. C 7.] Marshy meadow, Lambriggan, near Perranporth, v.-c. 1, August 9, 1923. Det. C. E. Britton.—F. RILSTONE.

C. obscura Jord., forma *pinnatifida* C. E. B. [Ref. No. C 1.] Cornfield border, Lambourne Hill, near Perranporth, v-.c. 1, August 4, 1923. Det. C. E. Britton.—F. RILSTONE.

C. obscura Jord., forma *elongata* C. E. B. [Ref. No. C 3.] Border of cornfield, Lambourne Hill, near Perranporth, v.-c. 1, August 6, 1923.—F. RILSTONE. "Quite representative of the form of *C. obscura* Jord., designated by the name of *elongata*. As the stems come from one plant, they afford tangible proof of the luxuriant growth this plant can assume."—BRITTON.

Crepis capillaris Wallr., var. [Ref. No. AA 249.] Frilford, Berks, July 1923.—G. C. DRUCE.

Hieracium anglicum Fr. Smoo Cave, W. Sutherland, July 1923. Named by J. Cryer.—G. C. DRUCE.

H. praealtum Vill. Still occurring in considerable quantity on the railway bank between Castlethorpe and Hanslope, Bucks, July 1923.—G. C. DRUCE.

H. stoloniflorum W. & K. In great quantity on the railway banks between Castlethorpe and Hanslope, Bucks, where I found it in 1899. It has now spread to the western side of the railway. Probably seeds were originally shaken out of fodder trucks, as it is associated with other European species, of which one, *Anthemis tinctoria*, has now spread for a quarter of a mile.—G. C. DRUCE.

H. Schmidtii Tausch, var. *eustomon* Linton. Craig Gleisiad, W. Brecon, July 4, 1923.—H. J. RIDDELSDELL. "Yes."—CRYER.

H. hypochaeroides Gibs. Dyffryn Crawnon, v.-c. 42, July 5, 1923. Ley used to suspect the status of this species here, and of course it is scarce in the south and west, but I can see no good reason for suspecting it here or in W. Gloucester.—H. J. RIDDELSDELL. "Yes."—CRYER.

H. britannicum F. J. H., var. *ovale* Ley. Craig Cille, v.-c. 42, July 6, 1923.— H. J. Riddelsdell. "Yes."—Cryer.

H. vagense Ley. Wye side, above Erwood, v.-c. 42, May 23, 1923. Very young.—H. J. Riddelsdell. "Yes."—Cryer.

H. cambricum F. J. H. Origin: Great Orme's Head; cult. Ledbury, June 8, 1923.—S. H. Bickham.

H. pachyphyllum Purchas. Great Doward, v.-c. 36, May 23, 1923. Styles livescent to yellow; ligules hairy.—H. J. Riddelsdell. "Yes."—Cryer.

H. sanguineum Ley. Dyffryn Crawnon, v.-c. 42, July 5, 1923. In great quantity.—H. J. Riddelsdell. "Yes."—Cryer.

H. stenolepis Lindeb. Craig Cille, v.-c. 42, July 6, 1923. Described by Ley as var. *sub-britannicum*, but Mr Cryer tells me that the variety is now dropped.—H. J. Riddelsdell. "Yes."—Cryer.

H. silvaticum Gouan, var. *micracladium* Dahlst. = *H. murorum* L., var. *micracladium* (Dahlst.) F. J. H. Ingleton, v.-c. 64, carboniferous limestone at 800 feet, June 30, 1923.—J. Cryer.

H. pellucidum Laestad. Mountain cliffs in Breconshire, July 1923. One of our most easily recognised Hawkweeds. — H. J. Riddelsdell. "Yes."—Cryer.

H. repandum Ley. Craig Gleisiad, v.-c. 42, July 4, 1923. Raised by Ley to specific status.—H. J. Riddelsdell. "Yes."—Cryer.

H. serratifrons Almq., var. *lepistoides* Johanns. Road from Abergavenny to Pontrilas, v.-c. 35, July 3, 1923; Capelyffin, v.-c. 42, July 3, 1923; Great Doward, v.-c. 36, May 23, 1923. A common form in hilly parts of S. and W. England.—H. J. Riddelsdell. "Yes."—Cryer.

H. subulatidens Dahlst. Taren yr Esgob and in lane at Capelyffin, v.-c. 42, July 3, 1923.—H. J. Riddelsdell. "Yes."—Cryer.

H. platyphyllum Ley. Taren yr Esgob, v.-c. 42, July 3, 1923.—H. J. Riddelsdell. "Yes."—Cryer.

H. euprepes F. J. H. Dyffryn Crawnon, v.-c. 42, July 5, 1923, and Taren yr Esgob, v.-c. 42, July 3, 1923.—H. J. Riddelsdell. "Yes."—Cryer.

H. maculatum Sm. Twisleton Crags, v.-c. 64, carboniferous limestone at 850 feet, July 1, 1923. Truly wild.—J. CRYER.

H. scanicum Dahlst. Fan Nedd, v.-c. 42, July 7, 1923.—H. J. RIDDELSDELL. "Yes."—CRYER.

H. diaphanoides Lindeb Moira, Leicester, v.-c. 55a, June 1916. —Coll. A. R. HORWOOD; comm. NATIONAL MUSEUM OF WALES.

H. umbellatum L Great Fox Cover, Lindbridge, Rutland, v.-c. 55b, August 1916.—Coll. A. R. HORWOOD; comm. NATIONAL MUSEUM OF WALES.

H. umbellatum L., var. *pauciflorum* Hartm. On a railway bank, Somerton, v.-c. 23, September 29, 1923. "I think so."—CRYER. Var. *linarifolium* Wallr. In the same locality. The two forms grew almost wholly—not quite—in separate and distinct groups. This suggests late introduction to the locality.—H. J. RIDDELSDELL. "Yes."—CRYER.

Hypochoeris glabra L. [Ref. No. AA 303.] Between Stow Wood and Headington, Oxon, July 1923. Some years ago a few specimens were found in derelict ground in this neighbourhood, but this year a considerable quantity grew in corn. This, which is the typical species, has not been previously distributed from the county.—G. C. DRUCE.

Taraxacum sp. [Ref. No. AA 49.] Oxford, May 1923. Near *intricatum*.—G. C. DRUCE.

Taraxacum sp. [Ref. No. AA 233.] The Crescent, Oxford, June 1923.—G. C. DRUCE.

T. obliquum Dahlst. Between cobbles, Distillery yard, F. Ransome's, Hitchin, Herts, May 26 and June 6, 1923.—J. E. LITTLE.

T. naevosum Dahlst. Near Sibford, May 1922. First described by Dahlstedt in Warming's *Botany of the Faroes*. It occurs not only there, but in Scandinavia and Iceland, and I have found it in Britain, in the Kentish marshes near Erith, as well as in Berkshire and Forfarshire. See also *Rep. B.E.C.* 29, 1920.—G. C. DRUCE.

Taraxacum sp. (section Vulgaria). [Ref. No. 2049.] Marshy meadow, Wakes Colne, N. Essex, April 14, 1923. Flowers bright yellow; outer ligules striped with brown; bracts glaucous, inner erect at first, then sub-patent, outer patent, at length loosely reflexed. The only form observed in this large meadow.—G. C. BROWN.

Lactuca tatarica C. A. Mey. Growing among rocks on seashore, Kenmore, Galway, September 15, 1923.—D. J. EVANS. "Yes."—DRUCE.

Sonchus oleraceus L., var. *ciliatus* (Lam.) = var. *lacerus* (Willd.). Oxford, August 1923. Probably this is a good sub-species, as it breeds true. It is a frequent plant of the coastal area.—G. C. DRUCE.

× *Erica Watsoni* Benth. Near Wareham, Dorset, August 1923. Flowering rather earlier than *ciliaris*, which was only beginning to show blossom on July 30.—G. C. DRUCE.

Moneses uniflora A. Gray. Near Golspie, E. Sutherland, July 1923. With Mr Williamson I discovered this plant in a locality new to me. It grew in a damp larch wood in great quantity and in good and fragrant blossom.—G. C. DRUCE.

Limonium ——. [Ref. No. 20.] Shelving cliff, S. Pembrokeshire, July 19, 1923.—T. J. WALL. "*L. binervosum* C. E. S. The leaves are too spathulate for the new species, *Statice transwalliana* Pugsley." —J. M. ROPER. "*L. binervosum*, I should say."—SALMON. "Under *L. binervosum* C. E. Salmon. Not Mr Pugsley's newly described plant."—BARTON.

Lysimachia vulgaris L., var. *maculata* Druce. See *Rep. B.E.C.* 290, 1918. Byfleet canal-side, Surrey, August 1923.—G. C. DRUCE and Lady DAVY. Also near Ridge, Dorset, with Major and Mr VAN DE WEYER.—G. C. DRUCE.

Microcala filiformis Hoff. & Link. By Littlesea, Studland, Dorset, July 1923.—W. BIDDISCOMBE.

Gentiana verna L. On limestone, Castlegar, June 18, 1923.—D. J. EVANS.

G. Amarella L., var. *praecox* Raf.? [Ref. No. AA 333.] In great quantity on the chalk downs about Ivinghoe, Bucks, June 1923. I am by no means certain that this is correctly named, although it agrees with a few plants from Wilts and the Isle of Wight which have been thus identified. Murbeck puts *praecox* under *G. lingulata*, which he keeps apart from *axillaris*—*Amarella* proper. In the broader and more obtuse divisions of the corolla and in its shape and colour there is a distinct approach to *germanica*. Long ago Trimen said my Berkshire *praecox* might as well be put to *germanica* as to *Amarella.*—G. C. DRUCE.

G. septentrionalis Druce in Fl. Zetl. 49, 1922. [Ref. No. AA 38.] On the Links of Dunnet, Caithness, July 1923. This is the same plant as that which grows so plentifully in Dunrossness, Shetland,

and is, I think, identical with the Scottish plant named *multicaulis* Lange. Although often copiously branched from the base, it is not rarely sub-simple. The flowers are never of the tint of southern *Amarella*, but are almost white above, with a rosy-purple tinge on the outside of the corolla. It seems a good species, which I have not seen south of Ross-shire.—G. C. DRUCE.

G. campestris L., forma *alba*. Roro, Glen Lyon, M. Perth, August 1923, with Mrs FLEMING. Remarkably luxuriant specimens, some being 15 inches high, but I am only distributing the var. *alba*, which grew with the type.—G. C. DRUCE.

Amsinkia lycopsioides Lehm. ? Biggleswade, Beds, May 22, 1923. Limb of corolla about 12 mm. in diameter; stamens inserted below the centre of the corolla tube. In cultivated ground among lettuce plants. Mr A. J. Wilmott has seen this. The naming is rendered difficult by possible dimorphism in the group.—Coll. C. COURSE and M. C. WILLIAMS; comm. J. E. LITTLE. "Not *lycopsioides*, but either *intermedia* or *Menziesii*."—DRUCE.

Symphytum orientale L. In the parish of Bickington, N. Devon, April 1923. A European species quite naturalised here.—Coll. A. W. TRETHEWY; comm. G. C. DRUCE.

Symphytum sp. Cotesbach, Leicester, v. c. 55a, July 1916.—Coll. A. R. HORWOOD; comm. NATIONAL MUSEUM OF WALES.

Myosotis palustris Hill. [Ref. No. 677.] Dolgelley, Merioneth, August 15, 1923.—W. C. BARTON.

M. caespitosa Schultz ? [Ref. No. AA 301.] Cothill, Berks, June 1923. On the mud of a dried-up pond amid *M. palustris*, with which it grew in a great mass, the latter being in splendid flower. This small-flowered plant, the corolla of which was only about half the size of *palustris*, was not caespitose, but had solitary stems and paler flowers. The whole group requires further study.—G. C. DRUCE.

M. versicolor Sm., var. *pallida* Bréb. [Ref. No. 657.] St Catherine's Bay, Jersey, June 15, 1923.—W. C. BARTON.

Lithospermum officinale L. Field in neighbourhood of Defford, Worcester, June 14, 1923.—AGATHA WILKINSON.

Cuscuta Epilinum DC. In abundance on *Linum usitatissimum*, Stanway, N. Essex, September 16, 1923.—G. C. BROWN. "Evidently this is correct, but as it is not a British species it has been imported with the seed of *Linum*, most probably."—FRASER.

C. trifolii Bab. Swerford Heath, v.-c. 23, September 1923. I am not certain of this name, as the gathering was made by a school-child and brought to me.—H. J. Riddelsdell. "Evidently correct; its very local occurrence would indicate introduction with clover seed."—Fraser.

Datura Stramonium L., seedlings. St Philip's Marsh, Bristol, W. Gloucester, August 30, 1923.—Ida M. Roper.

Scrophularia aquatica L. With leaves hairy beneath. Osier bed, Cadwell, Beds, October 29, 1923. This seems to agree with Brébisson's var. *pubescens* as far as description goes, but I have not seen a sheet. It is locally a not uncommon form. The character is not a very strong one for a variety. It may occur with the appendiculate leaf, which is the var. *appendiculata* Mérat. The latter character is not constant even on the same plant.—J. E. Little.

Mimulus moschatus Dougl. Ceinws, Corris Valley, Montgomery, September 3, 1923.—W. C. Barton.

Veronica aquatica Bernh. [Ref. No. AA 306.] Cothill, Berks, June 1923. Differing from *V. Anagallis-aq.* L. in its laxer inflorescence, the more patent pedicels, and more deeply emarginate and less cuneate fruit.—G. C. Druce.

V. alsinefolia. Alien in field near Chiddingford, Surrey, May-June 1923. This has persisted in the original field where we, of the Woking Field Club, found it about four or five years. This year it was very plentiful and certainly covered a larger area.—W. Biddiscombe. "This is a slip of the pen for *acinifolia* L. It seems thoroughly established in this locality, whence I distributed specimens in 1920. See *Report* 238. It was discovered there by Mrs Wilde."—Druce.

Euphrasia. Park Farm, Kutgashall, Sussex, August 3, 1923.—R. J. Burdon. "A mixed gathering."—Marquand.

E. brevipila B. & G. Bettyhill, W. Sutherland, July 1922.—G. C. Druce.

E. gracilis Fr. The Carnanes, Isle of Man, September 23, 1923. Flowers violet, white, and yellow. New to v.-c. 71.—A. Wilson and J. A. Wheldon.

Rhinanthus major Ehrh. [Ref. No. AA 310.] Bettyhill, W. Sutherland, July 1923. A beautiful and distinct species, which, when once seen, should not be mistaken for *Crista-galli.* Normally a plant of disturbed soil, here it grew in a potato patch. The Hon.

Mrs C. Rothschild sent it me from this place about five years ago. It was too early to obtain ripe seed, but apparently it is var. *apterus.*—G. C. DRUCE.

Orobanche Ritro G. & G., var. *hypochaeroides* Beck. St Ouen's Bay, Jersey, June 14, 1923. Rather young, but in good quantity this year. I counted over thirty plants in one square yard of ground. —W. C. BARTON. "Yes."—DRUCE.

O. amethystea Thuill. St Ouen's Bay, Jersey, June 14, 1923. Plentiful in the S.-W. corner of the island. This plant matches quite well Beck's figure (*Mon.* 230), and answers well to Babington's description.—W. C. BARTON. Also sent from St Mary's, Scilly Isles, June 1923.—HAROLD DOWNES. "Yes."—DRUCE.

Utricularia vulgaris L. [Ref. No. 679.] Dovey Junction, Montgomery, August 13, 1923.—W. C. BARTON. "In absence of flowers I hesitate. Is it not likely to be *U. major* ?"—DRUCE.

U. minor L. Dovey Junction, Montgomery, August 13, 1923.—W. C. BARTON.

Pinguicula lusitanica L. Middlebere Heath, near Corfe, Dorset, June 23, 1923.—W. BIDDISCOMBE.

Mentha longifolia Huds., var. *Nicholsiana* (Strail). Waste ground, Canton, Cardiff, August 1923. Quite a large clump of this plant has appeared for the last four seasons right in the middle of some old scrap iron on a railway siding. The spot is "made" ground and quite dry.—R. L. SMITH. "Yes, I think it is best put there. The correct spelling is *Nicholsoniana.*"—DRUCE. "I agree. It is just a broad-leaved, rather short-leaved *M. longifolia*, with a mealy pubescence most evident on the upper face of the leaves. The specimen is rather more hairy than that sent through the Exchange Club by Augustin Ley in 1908."—FRASER.

M. villosa (Huds.). Sherard's Green, Malvern, v.-c. 37, August 16, 1923. The specimens were gathered from a patch of plants growing on the edge of a damp ditch just outside a cottage garden, but whether any grew inside the garden I was not able to determine. On a neighbouring common grows a *Mentha* generally called *M. alopecuroides* (Hull), vide *Botany of Worcestershire* (Amphlett & Rea), p. 282, which very much resembles the plants distributed.—T. J. WALL. "Yes."—FRASER. "Yes ; the hybrid bearing that name."—DRUCE. "Hudson (*Fl. Ang.*, ed. 2) describes his *villosa* as having ovate-lanceolate, acute leaves. Mr Wall's plant seems Hudson's (ed. 1) *M. longifolia.*"—SALMON.

M. aquatica L., forma. Brinklow, Warwick, July 5, 1923. A diminutive form growing with the type. There was one flower head, at the end of the stronger stems, in size between a radish seed and a small pea.—L. Cumming. "? A young state of *Veronica Chamaedrys.*" —Robinson. "This is a barren form of *Veronica Chamaedrys.*" —Druce.

× *M. pubescens* Willd. (*M. aquatica* × *longifolia*), var. *hircina* (Hull). [Ref. No. 2074.] Abundant by roadside, Peldon, N. Essex, August 30, 1923. Named as above by Mr Fraser in 1920. Mr W. C. Barton, who has also seen my plant, remarks—"*M. aquatica* is obvious from the inflorescence, but I think the other parent is quite as likely to be *spicata.*" I have known the plant here and in Mersea Island, a mile away, since 1909. Odour decidedly unpleasant and strong.—G. C. Brown. "There must be some mistake in the above name. I remember being shown a specimen of Mint from Mersea Island some years ago, but that was a spicate Mint. The specimen before me is a verticillate Mint. It is, in fact, *Mentha rubra* Sm., an average specimen with subglabrous stems, leaves, calyx, and pedicels." —Fraser.

× *M. hircina* Hull (*M. aquatica* × *longifolia*). Plentiful in an ancient shady lane above Weston-in-Gordano, N. Somerset, October 4, 1923. Discovered by Miss Roper in 1918. The leaves are like those of *longifolia* but are petiolate. In size and the relative length of its teeth the calyx is intermediate between those of the parent species. Of the two forms placed under *M. pubescens* Willd. by British authors this is nearer to *hircina* than to Sole's *palustris*, and it is stated to be much the rarer of the two. Is it not doubtful if we do well to retain the name "*pubescens* Willd." since the description applies to several dissimilar plants, and consequently specimens distributed by continental botanists have represented distinct forms? See L'Abbé Strail in *Rep. B.E.C.* 187, 1887, and A. Bennett in *Rep. B.E.C.* 279, 1889. Mr Bennett had examined Mints from the General and Willdenow Herbaria in Berlin and concluded that the *M. pubescens* in those collections were varieties of our *M. aquatica.* Dr Druce, too, doubts if it be a tenable name for a *longifolia* hybrid (*Rep. B.E.C.* 834, 1919). Strail suggests that the *M. pubescens* Baker is probably the *M. nepetoides* Lejeune.—J. W. White. "I have not seen an authentic example of Hull's plant, but this seems *aquatica* × *longifolia* all right."—Salmon. "This is the Mint that was distributed in 1920 through the Botanical Exchange Club by C. Bucknall from the same locality. It varies greatly from year to year under cultivation in having long and narrow leaves and short and broad ones, also in the degree of hairiness."—Fraser.

Thymus Serpyllum L., sub-var. *angustifolius* (G. & G.) [Ref. No. 684.] Dolgelley, Merioneth, August 8, 1923.—W. C. Barton.

Satureia. [Ref. No. AA 501.] Corfe, Dorset, August 1923.—G. C. DRUCE. "This is *Calamintha Boetica* Boiss. & Reut."—MARQUAND.

Calamintha Acinos Scheele. St David's Rocks, Clifton, Bristol, W. Gloucester, May 26, 1923.—L. CUMMING.

C. ascendens Jord. = *C. officinalis* Host. Lambriggan, near Perranporth, v.-c. 1, August 1922.—F. RILSTONE.

C. Clinopodium Benth. = *C. vulgare* L. Roadside, Tytup, Dalton-in-Furness, N. Lancs, v.-c. 69b, July 24, 1923. Flowers pale purplish pink.—W. H. PEARSALL.

Nepeta hederacea Trev., forma. [Ref. No. AA 182.] Marston, Oxon, May 1923.—G. C. DRUCE.

Stachys recta L. Waste ground, Barry, Glamorgan, July 1923. Quite established in this habitat and increasing in numbers every year.—R. L. SMITH. "Yes."—DRUCE.

Lamium hybridum Vill., var. *decipiens* (Rouy). [Ref. No. 2168.] Blue House Crossing, Malden, Surrey, April 26, 1920.—C. E. BRITTON. "Is not the affinity of Mr Britton's plant rather with *L. purpureum*? The lobes of the leaves are rather 'crenate serrate' (Bab.) than 'incise-dentate' (Bab. for *L. hybridum*). The lobing of the leaves in *L. hybridum*, at least in the early part of the year, is evidently more acute, and the corolla-tube in the entomophilous state, which has just begun, is about 8 mm. in length. In the cleistogamic winter state it is about 3 mm. I have not seen *L. purpureum* in a cleistogamic winter state, whereas in *L. hybridum* this is the regular winter form."—LITTLE. "A very luxuriant state simulating *moluccellifolium*."—DRUCE. "This I consider correct for the variety *decipiens*, but should it not be placed under *L. purpureum*? My specimens of *L. hybridum* Vill. are smaller, with a shorter corolla tube and black veins to the calyx."—FRASER.

Teucrium Scordium L. Braunton Burrows, North Devon, August 31, 1923.—F. ROBINSON.

Ajuga pyramidalis × *reptans*. Originally from Ballyvaghan, Co. Clare, where it was discovered by Mr P. B. O'Kelly and grown in my own and Miss Trower's garden, where it has remained true for some years. In its early growth the inflorescence is very like that of *pyramidalis* and there is little appearance of *reptans*, but later in the season when it has produced runners it becomes much nearer *reptans*. Vegetatively it is very vigorous. I found a similar hybrid at Bettyhill, in W. Sutherland, in 1907. See *Rep B.E.C.* 207, 1915.—G. C. DRUCE.

Plantago Coronopus L., var. *ceratophyllon* (Rupin). Sea banks, Bispham, v.-c. 60, June 20, 1923. Some examples with narrower leaf rachis sent to show growth in more shaded position, *i.e.*, amongst taller herbage.—J. A. WHELDON.

P. lanceolata L. [Ref. No. AA 305.] Frilford, Berks, July 1923. As very tall specimens sometimes a yard high, the var. *major* Syme.—G. C. DRUCE.

Chenopodium opulifolium × *album* (= × *C. Preismanni*) Murr.? [Ref. No. 2096.] Waste ground, Hythe Quay, Colchester, N. Essex, September 2, 1923. This appears to be the plant recorded by Dr Druce in *Rep. B.E.C.* 744, 1922, from this station, although I overlooked it there last year. There was one large plant with a few small ones in the clump, all destroyed now by harbour improvements.—G. C. BROWN.

C. album L., var. *spicatum* Koch. Purwell Field, Hitchin, v.-c. 20, December 7, 1922. In lucerne, perhaps introduced with it. This variety is locally less abundant than var. *virescens* Wahl. (var. *paganum* Reichb.), and, I think, var. *integerrimum* Gray is the least common. Where the two latter occur together, as on Wilbury Hill, intermediates occur which are hard to place.—J. E. LITTLE. "Useless specimens from a critical point of view."—DRUCE.

Rumex obtusifolius × *pulcher*. [Ref. No. 561.] Windmill Hill, Hitchin, Herts; flowers July 26 and September 17, fruits September 17, 1923. Mr E. G. Baker assents to the naming, and refers to *R. ogulinensis* Borbas in *Magyar Bot. Lapok.*, 1904. In 1922, in company with Preb. R. J. Burdon, I gathered a plant near Portfield Cemetery, Chichester, which I believe is referable to the same parentage.—J. E. LITTLE. "I am unable to see *R. obtusifolius* in this. The brown panicle of one specimen had lost its upper leaves, but they die away early in *R. pulcher*. The fruits and the spreading recurving branches are characteristic of *R. pulcher*."—FRASER.

R. nemorosus Schrad. Bascote Heath, Warwick, July 20, 1923.—L. CUMMING. "The name selected in *The Cambridge Flora* is *R. condylodes* Bieb., dating from 1808, one year earlier than *nemorosus*. The oldest trivial is to be found in *R. sanguineus*, var. *viridis* Sibth. of 1794, and, if the permanence of the trivial in whatever grade be adopted, it should stand as *R. viridis* (Sibth.)."—DRUCE.

R. maritimus L. Thorney Moor, Langport, Somerset, v.-c. 5, August 10, 1923.—HAROLD DOWNES.

Rumex. [Ref. No. 2073.] One large plant on waste ground, Hythe Quay, Colchester, N. Essex, July 26, 1923. I am quite unable to trace this plant. The leaves are quite smooth, almost shining, petioles of radical leaves grooved. The material is not very saisfactory, I fear.—G. C. BROWN. "This is the N. American *R. salicifolius* Weinm."—DRUCE.

Aristolochia Clematitis L. Mayfield, E. Sussex, June 24 and July 15, 1923.—A. H. WOLLEY-DOD.

Euphorbia platyphyllos L. Foot of Blackdown, Sussex, July 18, 1923.—R. J. BURDON. "Correct, but with more hairy leaves than usual. The tubercles of the capsule end also in long hairs."—I. M. ROPER.

E. virgata W. & K. Near Six Mile Bottom, Cambridge, June 1923, growing in the grassy border of the road.—G. C. DRUCE.

—— Minehead, N. Devon.—F. ROBINSON. "*Mercurialis annua* ♀, the narrow-leaved form."—W. C. BARTON.

Buxus sempervirens L. Box Wood, Boxwell, E. Gloster, April 10, 1923. The manor of Boxwell, mentioned in Domesday survey, existed in A.D. 1066, and, like other manors called after trees, derived its name from the prevalent box woods, where the tree may be considered indigenous. The present Box Wood covers a steep hillside of half-a-mile in length, with no admixture of other trees.—IDA M. ROPER. "A welcome specimen from a locality in which some authors consider it to be a native species. My own view, notwithstanding the opinion of Solms-Laubach, is that it is not native to Britain, but that we owe its introduction to the Romans during their long occupation. Of course, it is thoroughly naturalised."—DRUCE.

Ulmus nitens Moench. Willian, Herts, March 12 and July 4, 1923. No fruit was produced in 1923.—J. E. LITTLE. "Yes, but F. N. Williams showed that the earlier name is *U. carpinifolia* Borck."—DRUCE. "Has the character of *U. nitens*, but the leaves are unusually short and broad. *U. nitens* is extremely variable in leaf characters."—FRASER. Also sent from spinney near Gosmore, Hitchin, Herts, May 19 and July 2, 1923.—J. E. LITTLE. "A good average form of *U. nitens*, though there are narrower and longer forms."—FRASER.

U. minor Mill. [Ref. No. 533.] Lane between Purwell and Nine Springs, Hitchin, Herts, September 22 and February 16, 1923. This tree, of which there are several other examples near at hand, suckers freely. The branches are rather more tortuous than in *U. nitens*, and the canopy of leaves usually thinner. The bole may be short or continued into a long main stem. I had some difficulty in reaching flowering branches. No fruit was formed in 1923. Det. A. B. Jackson.—J. E. LITTLE. "Quite like the trees of this species in Essex. The leaves are rather more scabrous than usual because taken from the sucker growths."—FRASER. "This is my *U. Plotii.* It does not agree with Miller's description of *U. minor,* which is almost certainly *U. stricta* Lindley, a subject which I hope to treat of more fully in the *Report* next year."—DRUCE.

U. montana Stokes (*U. glabra* Huds.). [Ref. No. 546.] Spinney near Oughton Head, Hitchin, Herts, May 30 and August 20, 1923.—J. E. LITTLE Also [Ref. No. 547] large solitary tree in grass of Priory Park, near South Lodge, Hitchin, Herts, March 10, May 19, and July 25. Fruits rather unusually small; bole about 15 feet; height about 80 feet, and spread 80 feet.—J. E. LITTLE.

Carpinus Betulus L. [Ref. No. 571.] Great Wymondley Springs, Herts; fruits October 11, 1922; leaves August 30, 1923.—J. E. LITTLE.

C. Betulus L., var. *parvifolia* Miller Christy. [Ref. No. AA 243.] Stokenchurch, Oxon, June 1923.—G. C. DRUCE.

Salix pentandra L, ♂. [Ref. No. 555.] West Mill, Hitchin, Herts, May 31 and October 15, 1923. I do not know the history of these bushes of *S. pentandra.* One is much larger than the rest and is perhaps older. They are in a peaty reed swamp on the edge of the river Oughton. About 60 yards away, on a water course, is a hybrid of *pentandra,* which may be due to these bushes.—J. E. LITTLE. "A N.C.R, but presumably planted."—DRUCE. "I agree. The ♂ form of the species has much broader leaves than the ♀ in my experience."—FRASER.

S. fragilis L., var *britannica* F. B. W. Humberstone, Leics, v.-c. 55a, July 1916.—Coll. A. R. HORWOOD; comm. NATIONAL MUSEUM OF WALES. "I quite agree. It is the common British form."—FRASER.

S. alba L., var. *vitellina* (L.). Scraptoft, Leics, v.-c. 55a, August 1916.—Coll. A. R. HORWOOD; comm. NATIONAL MUSEUM OF WALES. "I agree. The dense or unusual hairiness of the leaves would indicate that the specimens have been taken from an old tree."—FRASER

S. alba L., var. *vitellina* × *triandra,* ♂. [Ref. No. 549.] Plantation, Fairfield, Hitchin, Herts, April 21 and July 11, 1923. Twigs orange coloured, fragile at the base. Of 40 flowers examined, 37 had two stamens, 3 had three stamens. The foliage favours *S. triandra.*—J. E. LITTLE. "This may be the hybrid named, but *S. alba,* var.

vitellina is the dominant parent. The principal evidence I can see of *S. triandra* is the elliptic-lanceolate leaves and deeper serratures than in *S. alba*, var. *vitellina.* Most or all of the trees of the latter I have examined have linear-lanceolate leaves, even when twice as long as those of the specimens under notice."—FRASER. Also [Ref. No. 525] from osier bed, Cadwell, Beds, September 26, 1921, April 28 and October 29, 1923. For notes see *W.E.C. Report* 181, 1921. Of 40 flowers examined on April 28, 1923, 14 had two stamens, 18 had three stamens, and 8 had four stamens.—J. E. LITTLE. "The leaves of No. 525 have similar characters to the specimens from Fairfield, Hitchin, No. 549, but they are more glabrous, which is always the case when the plant has been recently stooled or cut down. The *vitellina* parent is here again the dominant one."—FRASER.

S. alba × *pentandra* Kerner, ♂. Ford Bridge, South Merstham, Surrey, May 21 and August 20, 1922. A tree about 25-30 feet high and as broad. The specimens from Chilmead Farm, Red Hill, Surrey, collected in 1922 and 1923, were from a bush about 8 feet high. I doubt whether the hybrid originated here, but it has been in this neighbourhood for many years, and several trees with trunks 12-14 inches in diameter, which existed in 1899, have recently been pollarded. Ref. Nos. 120 and 436, as prefixed to the name on the cards. —J. FRASER. "*S. alba* × *pentandra* is not recorded for Surrey in the *Cambridge Flora.*"—DRUCE.

S. alba × *babylonica.* [Ref. No. 2580.] Lower Morden, Surrey; leaves October 30, 1921; flowers April 30, 1923.—C. E. BRITTON. "I do not remember seeing this before. The *Cambridge Flora* gives no locality."—DRUCE.

S. triandra L., forma, ♂. [Ref. No. 562.] Sewage farm, Hitchin, Herts, September 12, 1921, and April 17 and October 18, 1923. Twigs not easily detached. Named by E. F. Linton.—J. E. LITTLE. "The leaves of this are rounded at the base, whereas those of the typical *S. triandra* are decidedly tapered to the base. The specimen is what I call *S. triandra* L., var. *amygdalina* Sm., forma *discolor.*"—FRASER.

S. triandra × *viminalis*, ♀. [Ref. No. 502.] Osier holt, Purwell, Hitchin, Herts, August 18, 1921, and April 11, 1922. "I suppose this is right, but the stipules are as narrow as in *S. viminalis*," E. F. Linton.—J. E. LITTLE. "I agree to this. The long linear-lanceolate leaves and the small linear-lanceolate, often stipitate, stipules are characteristic of the hybrid. The catkins, ♂ and ♀, open well in Surrey, but at Hitchin may have been injured by the red spider and aphides last year."—FRASER.

× *S. acuminata* Sm. [Ref. No. 527.] Brook End, St Ippolyts, Herts, October 22, 1922, and March 9, 1923. "I agree," E. F. Linton. J. E. LITTLE. "I quite agree. The young leaves are very downy beneath, becoming more or less glabrescent by September. The large, dark ♀ catkins are also very characteristic. The striæ beneath the bark and the very downy one year-old shoots indicate *S. cinerea* as one of the parents.—FRASER. Also [Ref. No. 570] ♀ sent from Roxley, Willian, Herts, flowers March 12, leaves October 13, 1923.—J. E. LITTLE. "Quite a typical *S. acuminata*, with its large catkins, dark bracts, and blackish pubescence of the one year-old shoots."—FRASER. Another specimen [Ref. No. 514], sent by Mr Little from a hedge in the same locality, leaves only. E. F. Linton suggested was *S. acuminata* "I regard the very broad leaves and their thinly hairy character as due to the environment in the hedge, otherwise the leaves are those of *S. acuminata* Sm."—FRASER.

S. cinerea L., var. *oleifolia*, ♂. [Ref. No. 528.[Wood near Tods Green, Wymondley, Herts, March 4 and September 13, 1923. E. F. Linton assents to the name. J. E. LITTLE. "I would prefer to call this a form of *S. cinerea* L., f. *aquatica* (Sm.). I have been giving this some attention lately, and find it not uncommon in Surrey. The leaves are glaucous or ashen below and shortly pubescent. The leaves of the var. *oleifolia* are rusty beneath, and narrower, with dense prominent reticulation."—FRASER.

S. cinerea L., forma. [Ref. No. 2064.] One bush only in damp gravelly hollow, Middlewick, Colchester, N. Essex, June 3, 1923. Apparently nearest to var. *oleifolia* Sm. as a form or hybrid, though the leaves are very small and have an occasional serration. The slenderness of stems points to a crossing with *S. aurita*, with which it grows, but all the leaf tips appear straight. No trace of catkins. I hope to find it flower next year.—G. C. BROWN.

S. cinerea × *viminalis* (*S. Smithiana* Willd.). [Ref. No. 2050.] Wood, Berechurch Park, N. Essex, May 4 and August 19, 1923. Catkin scales dark brown, leaves on flowering branches light green above, becoming dark green and shining above. Several large bushes in partial shade.—G. C. BROWN. "I would call this *S. caprea* × *viminalis* (*S. mollissima* Smith). The well exposed leaves are densely and softly pubescent, with white pubescence, and prominent white side veins. The lower leaves are grey-pubescent, but this may be due to environment, and is admitted. More than one denudate form occurs in this group of hybrids. The large ovaries are also tomentose and white. A piece of a two-year-old shoot, with the bark removed to show whether striæ were present or not, would have been desirable."—FRASER.

S. decipiens Hoffm. Red Hill Marsh, May 21 and August 20, 1922. The number [261] prefixed to the name is that in my collection.

and will serve as a reference number. Two trees about 25 feet high, first collected in 1899, in association with *S. triandra amygdalina*, *S. fragilis*, *S. alba × fragilis*, and *S. cinerea*. *S. decipiens* also occurs in woods between this station and Merstham. The specimens have not dried well owing partly to the trees being shaded on the parts within my reach.—FRASER.

Salix. A correction is necessary in the last *Report*, page 856. Line 9 should read *S. aurita × caprea*, ♀. Concerning this plant Mr Little has kindly further contributed the following points, which are, he thinks, against a pure *caprea* origin :—(1) There is striation of the wood, scanty, entirely absent in some parts, but occasionally quite evident and not accidental. (2) Floral bracteoles obtuse at the tips. (3) Leaf tips often oblique and deflexed. The leaves are often rather narrowly obovate ; margins undulate, crenate, slightly reflexed. (4) The station was, by a brook, not usual for pure *caprea*.

Orchis praetermissa Druce. [Ref. No. AA 243.] Chippenham, Cambridge, June 1923. Growing here quite typically and without hybrids.—G. C. DRUCE.

O. incarnata L., var. *pulchella* Druce. New Forest, Hants, June 1923.—T. STEPHENSON. "Yes."—DRUCE.

O. laxiflora Lam. Guernsey, June 1923.—T. A. STEPHENSON.

Allium sativum L. On grass bank near sea, Kenmore, Galway, August 25, 1923.—D. J. EVANS. "Yes."—DRUCE.

Juncus acutus L. Braunton Burrows, North Devon, August 31, 1923.—F. ROBINSON.

J. inflexus L. Anthela very compact. Shingham, W. Norfolk, August 5, 1923.—J. E. LITTLE and ANNA LUDDINGTON. "This appears to be a departure from the usual habit. I do not know that any such compact form has been distributed or has received notice." —J. E. LITTLE. "Yes."—DRUCE. "I agree. Notwithstanding the compact anthela, the striations of the stem and the mucro to the capsule show that this is correctly named. *J. effusus* behaves in the same way in having a dense inflorescence in some districts."—FRASER.

J. balticus Willd. Dunnet Links, Caithness, in great quantity, July 1923.—G. C. DRUCE.

J. bulbosus L. Borth, Glamorgan, June 20, 1923.—L. CUMMING. "Yes."—DRUCE.

J. compressus Jacq. Chertsey pits, Surrey, July 10, 1923.—C. E. SALMON.

J. capitatus Weig. La Moye, Jersey, June 14, 1923.—W. C. BARTON.

Juncoides sylvaticum (Huds.) Druce. High Woods, Colchester, N. Essex, May 1923. In my experience a very scarce plant in N. Essex. I only know of two small patches in the High Woods, which may prove of interest as vouchers —G. C. BROWN.

Typha angustifolia L. Ambrosden, Oxon, August 1923.—G. C. DRUCE.

Eriocaulon septangulare With. Roundstone, Connemara, Ireland, August 20, 1907.—Coll. C. BUCKNALL ; comm. J. W. WHITE.

Scirpus Holoschoenus L. Braunton Burrows, North Devon, August 31, 1923.—F. ROBINSON.

S. setaceus L Pontperthog, Montgomery, September 3, 1923.—W. C. BARTON. "Yes ; the form I have named *pedicellatus*, some of the spikelets being stalked."—DRUCE.

S. rufus Schrad. [Ref. No. 2322.] Marsh between Carlin Geo and Geo of Gessan, at south-east end of Stronsay, Orkney, alt. 60 feet, June 27, 1923.—H. H. JOHNSTON.

Schoenus nigricans L. Middlebere Heath, Corfe, Dorset, June 26, 1923.—W. BIDDISCOMBE.

Carex pendula Huds. Banks of upper Lune, Westmorland, v.c. 69a, July 4, 1923.—W. H. PEARSALL. "Yes, and I think a N.C.R."—DRUCE.

C. sylvatica Huds., forma *composita*. [Ref. No. AA 304.] Woods above Chinnor, Oxon, June 1923.—G. C. DRUCE.

C. strigosa Huds. Woods above Chinnor, on the Bucks border, July 1923. Here it was found by Mr T. Gambier Parry, but in a different locality from one about a mile away where I had formerly seen it. It has not been distributed from Oxfordshire before.—G. C. DRUCE.

C. helodes Link. Wood at Winter's Hall, Hascombe, Surrey, June 23, 1923.—W. BIDDISCOMBE.

C. capillaris L. Cronkley Fell, on Sugar Limestone, alt. 2000 feet, v.-c. 65, July 7, 1920. In abundance.—J. CRYER.

C. punctata Lois. Near Corbière, Jersey, June 1923.—G. C. DRUCE.

C. Oederi Retz. Borth, Glamorgan, June 1923.—L. CUMMING. "No, it is a form of the aggregate *C. flava*, perhaps best put under var. *oedocarpa* And., although it approaches *lepidocarpa* in some respects. The plants are young."—DRUCE. Also sent from Frensham Little Pond, Surrey. Growing almost submerged on the margin of the pond, and from its very contiguous fertile spikes and sessile male one it approaches mere closely to the type form than any other I have seen or collected—W. BIDDISCOMBE. "Yes; very dwarf in this locality."—SALMON. "Yes."—DRUCE.

C. extensa Good. Near the Haven, Studland, Dorset, July 23, 1923.—W. BIDDISCOMBE.

C. tomentosa L. [Ref. No. AA 290.] Near Westwell, Oxon, July 1923, just on the Gloucestershire border, growing among rough pasture with bushes on a dry soil where Mr Noel Sandwith, in company with Mr T. Gambier Parry, found it as a most welcome and long expected addition to the Oxfordshire flora.—G. C. DRUCE.

C. elata All. Banks of River Leven, Low-wood, N. Lancs, v.-c. 69b, June 29, 1923.—W. H. PEARSALL.

C. echinata Murr. Deer Dyke Moss, N. Lancs, v.-c. 69b, June 23, 1923.—W. H. PEARSALL.

C. acuta auct. Ind. Kew = *C. gracilis* Curt. Specimens I sent last year have been so named by Messrs Bennett & Salmon. The latter wished to see riper fruits. On visiting the locality this year the plants had entirely disappeared.—L. CUMMING.

C. remota L. Banks of river Leven, Low-wood, N. Lancs, v.-c. 69b, growing with *C. elata*, June 29, 1923.—W. H. PEARSALL.

C. canescens L. Striber's Moss, N. Lancs, v.-c. 69b, June 23, 1923.—W. H. PEARSALL.

C. paniculata L., var. *simplex* Peterm. Brinklow, Warwick, July 31, 1923. I sent last year to the Club specimens of var. *simplicior*. This year I send plants from the same locality, which I venture to think are the form *simplex*.—L. CUMMING. "My specimen, with panicle branches an inch long, is scarcely my idea of *simplex*."—SALMON.

C. paniculata L., var. *simplicior* And. Scilly Isles, v.-c. 1, June 1923.—HAROLD DOWNES.

C. incurva Lightf. Bettyhill, at the mouth of the Naver, W. Sutherland, July 1923.—G. C. DRUCE.

Spartina Townsendi H. & J. Groves. Severn bank, Nupdown, W. Gloucester, September 5, 1923. New County Record. This species was planted near Cleveden, N. Somerset, about 1910, and some roots from there must have travelled thirty miles higher up the River Severn and become established. There are this year about 150 clumps of 12 feet and downwards in diameter in five separate spots close to the saltings.—IDA M. ROPER. Also sent from Hythe, Hants, June 1923.—T. STEPHENSON.

Phalaris canariensis L. Cultivated ground, Scilly Isles, v.-c. 1, June 1923.—HAROLD DOWNES.

Anthoxanthum odoratum L. [Ref. No. 685.] St Aubyn's, Jersey, June 18, 1923. Large plants with hairy glumes and interrupted panicle. This is not the var. *villosum* Lois., which has the leaf-sheaths hairy, and of which I have seen no British specimen. Asch. & Graeb. (*Syn.*) divide *A. odoratum* into two groups according as the lower glumes have long hairs on the nerves of the lower glumes or not, and subdivide again But I doubt whether our British plants admit of any rigid or even workable division on these lines. Both in Jersey and Guernsey the ordinary plant of the maritime cliffs has hairy glumes.—W. C. BARTON. "Yes, forma *interrupta* mihi."—DRUCE.

A. odoratum L., var. *villosum* Loisel.? [Ref. No. 2072.] High Woods, Colchester, N. Essex, August 2, 1923. The leaf sheaths on the majority of the specimens, which grew in deep shade, are villous, and I am not sure whether they should be referred to var. *villosum* or sub var. *silvaticum* A. & G., of which I have not seen a complete description.—G. C. BROWN.

Alopecurus pratensis L., var. *caesia* A. Schwarz. [Ref. No. AA 287.] In a damp pasture between Nuneham and Dorchester. Oxon, June 1923.- G. C. DRUCE.

Phleum alpinum L. Limestone cliffs on south side of Cross Fell, Cumberland, at 2350 feet, August 1923.—A. WILSON.

P. phleoides Simonk. Waste ground, Bradford, v.-c. 64, at 300 feet, June 18, 1923. Confirmed by Dr Druce.—J. CRYER. "*Koeleria phleoides* Pers., by a slip of the pen written *Phleum phleoides*."—DRUCE.

P. phleoides Simonk. Wilbury, Beds, June 1923.—G. C. DRUCE and Misses TROWER.

Agrostis nigra With. = *A. tenuis* Sibth., var. *nigra* (With.). Arable land, Malvern Wells, Worcester, September 6, 1923. Some of the specimens are ripe, but they may be acceptable in this state.—Coll. R. F. TOWNDROW; comm. S. H. BICKHAM. "Fruiting panicle open, sheaths smooth, ligule truncate. My example seems *A. vulgaris*."—SALMON. "This plant is best cited as *A. stolonifera* L. One of the main distinctions between *A. alba* and *A. nigra* is the position of the spines on the back of the glumes. I have examined a number of plants known as *A. alba* and *A. nigra* and can find no constant difference in that respect so as to be able to separate the one from the other by that character. Another character considered of importance between these two species is the distribution of the spikelets on the branches of the panicle. In *A. nigra* these are described as absent from the base of the branch, while in *A. alba* these are borne down to the base. In the specimen sent by Mr Bickham the glumes are spinous below the middle and nearly to the base in some cases; the panicle branches bear spikelets almost to the base (see article by J. E. Bagnall in *Journ. Bot.* 65, 1882."—SHERRIN.

Calamagrostis epigeios Roth. Ufton Woods, Warwick, July 20, 1923.—L. CUMMING. "Yes."—MARQUAND.

Gastridium lendigerum Gaud. Cultivated ground, foot of Blackdown, Sussex, July 11, 1923.—R. J. BURDON. "Yes; the more correct name is *G. ventricosum* Sch. & Thell."—DRUCE.

Apera interrupta Beauv. Frilford, Berks, with *Silene conica* in a lucerne field, in immense quantity, June-July 1923. In 1900 I found a solitary specimen on a wall in the neighbouring village of Marcham, but it did not reappear. It is difficult to account for its appearance here, except it came in lucerne seed. There was a specimen of *Phalaris minor* and of *Orthostachys erianthus* Benth., a Californian species, in the same field. As is the case with its ally, *Spica-venti*, a few plants of *interrupta* were of a purplish tint.—G. C. DRUCE.

Weingaertneria canescens Bernh. St Ouen's Bay, Jersey, June 14, 1923.—W. C. BARTON.

Holcus mollis L., var. *parviflorus* Parnell. Cronk-na-Irrey-Lhaa, Isle of Man, September 23, 1923.—A. WILSON and J. A. WHELDON. "Parnell says his variety is 9-12 inches high, and spikelets not more than half the size of type. His figure shows them 3 mm. long, his type 6 mm. In spite of these Isle of Man spikelets being 4 mm. long, I think they may pass as Parnell's *parviflorus*."—SALMON.

Avena fatua L., var. *pilosissima* Gray. [Ref. No. 2062.] Waste ground by maltings, Hythe Quay, Colchester, N. Essex, June 21, 1923. It has persisted in this spot in varying quantity since 1914. One or two plants have appeared with exceptionally large spikelets. Name, teste C. V. B. Marquand.—G. C. Brown.

A. strigosa Schreb., sub-sp. *glabrescens* Marq., var. *nigra* Marq. [Ref. No. AA 505.] Near Garth Castle, Mid Perth, in cultivated fields, August 1923. Named by C. V. B. Marquand.—G. C. Druce. "This is not quite all the above, but a mixed gathering with *Avena strigosa* Schreb., sub sp. *orcadensis* Marq. Sorted in distribution."—Marquand.

Sesleria caerulea Ard. On limestone fields, Castlegar, Co. Galway, May 1923.—D. J. Evans. "Yes."—Marquand.

Cynosurus echinatus L. [Ref. No. 666.] St Ouen's Bay, Jersey, June 16, 1923. Some of the plants growing in the abandoned trenches of the prisoners' camp were as much as four feet high. The panicles were large in proportion. Rouy has a sub-var. *giganteus*—"Plante robuste, atteignant 1 mètre, à panicule plus allongée, mais de même forme que chez le type." On the level ground the plants were of usual size.—W. C. Barton. "Remarkably vigorous specimens of *C. echinatus* with greatly elongated panicle."—Fraser and Druce. "Unusually luxuriant specimen of this characteristic species, doubtless due to their growing in heavily manured soil."—Marquand.

Desmazeria loliacea Nyman. Uphill, N. Somerset, June 22, 1923. —L. Cumming. "These are young specimens of *Sclerochloa rigida*." —Sherrin. "Mr Cumming's specimen from Uphill is *Festuca rigida*." —Druce. "No; these are *Festuca rigida* Kunth."—Marquand.

Briza minor L. Cultivated ground, Scilly Isles, v.-c. 1, June 1923.—Harold Downes.

Poa pratensis L., var. [Ref. No. 265.] Witney, Oxon, June 1923.—G. C. Druce.

P. compressa L. Wall top, Dolgelley, v.-c. 48, August 26, 1923. —W. C. Barton. "Not *P. compressa*, but *P. nemoralis* L."—Marquand. "The specimens are *P. nemoralis*."—I. M. Roper & White.

Festuca rottboellioides Kunth. Bismore Ledge, near Swanage, Dorset, July 1, 1923.—W. Biddiscombe. "Yes, *Desmazeria loliacea* Nyman."—Druce.

F. rubra L., var. *arenaria* (Osb.) Fr. Borth, Glamorgan, June 22, 1923.—L. Cumming.

F. membranacea (L.) Druce. St Ouen's Bay and the Quenvais, Jersey, June 1923.—G. C. DRUCE.

Bromus maximus Desf. = *B. rigens* L. Very abundant in cultivated ground, Scilly Isles, v.-c. 1, June 2, 1923.—HAROLD DOWNES.

B. unioloides H. B. K. Cultivated ground, St Mary's, Scilly Isles, June 12, 1923. "A grass of very wide distribution in tropical, sub-tropical, and even temperate regions, having been long used as a fodder crop," Dunn's *Alien Flora.*—HAROLD DOWNES. "Yes."—DRUCE. "I agree. It sometimes appears on rubbish-heaps in Surrey with slightly shorter awns."—FRASER.

B. interruptus Druce. Cultivated field, Snodland, E. Kent, June 2, 1923.—IDA M. ROPER. "Yes; the inner glume is split, but the inflorescence is rather weak."—DRUCE.

Brachypodium pinnatum Beauv., var. *pubescens* Gray. Whissendine, Rutland, v.-c. 55b, August 1916.—Coll. A. R. HORWOOD; comm. NATIONAL MUSEUM OF WALES. "Yes."—SALMON. "This is evidently correct. The lower sheaths of the leaves, the glumes, and the awns are pubescent."—FRASER.

Lolium italicum Br., forma. [Ref. No. AA 204.] In a corn-crop, Frilford, Berks, June 1923.—G. C. DRUCE.

Triticum turgidum L. [Ref. No. 2065.] In great abundance with other casuals by maltings, Hythe Quay, Colchester, N. Essex, June 21, 1923.—G. C. BROWN.

Equisetum sylvaticum L. Wood, East Donyland, N. Essex, June 17, 1923.—G. C. BROWN.

Pteris aquilina L., var. *integerrima* Moore. [Ref. No. 2630.] Banstead, Surrey, June 23, 1923.—C. E. BRITTON.

P. aquilina L., var. *crispa* Wollaston. [Ref. No. 2609.] Headley Heath, Surrey, August 5, 1923.—C. E. BRITTON. "*Pteris* vars., Britton. Yes, but I am afraid we must adopt the generic name *Pteridium*, since *Pteris* is limited to another Fern genus."—DRUCE.

Lastrea rigida Presl = *Dryopteris rigida* Underw. [Ref. No. 2010.] Crevices of Scar Limestone pavement, Whitbarrow Scar, Westmorland, at 550 feet, July 27, 1923.—A. WILSON. Also from Carboniferous Limestone, Twistleton Scars. v.-c. 64, June 11, 1923.—J. CRYER. "I quite agree. Beautiful specimens of a rare British Fern."—FRASER. "*Dryopteris rigida* Underw. is the accepted name by Christensen."—DRUCE.

Polypodium vulgare L., var. *serratum* Willd. [Ref. No. 537.] Hedge-bank, Carbrooke, v.-c. 28, November 1923.—F. ROBINSON.

Chara sp. The Lake, Kew Gardens, Surrey, August 12, 1923.—C. V. B. MARQUAND. "*C. fragilis* Desv., var. *Hedwigii* Kuetz."—GROVES.

C. aspera Willd., var. ? Frensham Little Pond, Surrey, September 23, 1923.—W. BIDDISCOMBE. "Yes, but a very dilapidated state of this beautiful plant."—GROVES.

C. vulgaris L Pond, East Flexford, Surrey, September 23, 1923.—W. BIDDISCOMBE. "Yes."—GROVES.

Chara. Reens, near Rumney, Monmouth, June 1922.—A. E. WADE. "*C. vulgaris.* Neither this nor the foregoing is a very noteworthy form. I do not think any useful object is gained by attempting to give names to the endless trivial forms and states of this polymorphous species. In his *Synopsis Characearum Europearum* Dr Miquel has no less than sixty-nine named forms, and his followers have busied themselves in adding to the number."—GROVES.

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The subscriptions—Ordinary Members, 10/-; Exchange Members, 12/6—are due, and should be paid on the first of January each year to G. C. Druce at the above address. Payment in advance for two or more years saves trouble and expense. Entrance fee for New Members, 5/-.

Mr C. V. B. Marquand acted as Distributor and Editor of the Exchange Club Report for 1923, the publication of which, owing to various reasons, was much delayed. The members are grateful to him for the toilsome task of sending out 5148 specimens. It contained several points of interest. A large number of Rubi were included and there were also some well-preserved Salices from Mr J. E. Little.

The year 1924 was, like its predecessor, dull, exceptionally rainy and with a low temperature. The result was that there was no blaze of blossom, but the flowering period was spread over a longer time than usual. Despite the comparative paucity of hawthorn blossom rarely has there been a more conspicuous and attractive display of " haws " than was to be seen last autumn. In Wales and Scotland the rainfall was unusually heavy and well nigh continuous so that the Hieracia and other alpines had few blossoms, yet in Zetland the Eyebrights afforded a magnificent show. Wind and rain were, however, almost world-spread—though Barcelona and the Balearics had an exceptionally dry season.

Among the discoveries of first published records in Britain during the year may be mentioned a *Limonium* of the Binervosum group which Mr Pugsley found in Pembrokeshire. He has named it *transwallianum*. Canon G. R. Bullock-Webster and Mr J. Groves have completed a splendid work on the Charophyta ; and *Chara muscosa*, a new species from Ireland, as well as some new varieties, have been described. The year was marked by a find of special interest made by a girl of Henley, who discovered specimens of the leafless *Epipogon* in a South Oxfordshire Wood. An account appeared on p. 330 of our *Report* issued in November 1924. Mr C. E. Salmon found a new hybrid Sedge in Surrey, its parents being *C. remota* and *divulsa*. Mr D. Lumb discovered a beautiful alien, the South European *Linaria pallida* completely naturalised on the shingle at Bardsey, Lancashire. In Jersey, etc., I found *Galium debile*, a plant belonging to the Palustre section. Dr Almquist has identified some Shepherd's Purses found by me as *B. sinuosa*, *B. odontophylla*, *B. lutetiana*, and *B. robusta*, while H. Dahlstedt has also named the following Taraxaca new to Britain :—*T. glaucinum* Dahlst., Sussex, *T. alonicense* Dahlst., Wales, Bucks, etc., *T. aucistrolobum* Dahlst., *T. cyanolepis* Dahlst., Oxon, Bucks, *T. mucronatum* Lindb. f., Oxon, *T. triangulare* Dahlst., Oxon, collected by myself, and *T. lactefrons* Dahlst. from Orkney gathered by Col. H. H. Johnston. A hybrid Rumex from Blackheath, Kent, is named by Professor Danser as a hybrid of *maritimus* with *dentatus* = × *R. Kloosii* Danser, which first originated in his garden at Amsterdam and has thus appeared for the first time in the wild state in Britain.

Among the New County Records the discovery in Oxfordshire of *Epipogon* is the most important. This was dealt with in the last *Report*. Mr Templeman has added *Salix herbacea* to the flora of the Isle of Man. *Epilobium Lamyi* was detected by Mr C. E. Salmon in the Herbarium of A. Wallis from near Reading. I have seen it near Henley in Oxfordshire and Mr J. S. L. Gilmour has recently found it near Uppingham. *Alchemilla glomerulans* was found by the writer on Lochnagar. Mr Trapnell obtained *Euphrasia salisburgensis* on Ben Evenagh in Londonderry, a considerable extension of its range. Many new records to the Irish vice-counties have been made in the *Irish Naturalist*, now, alas, defunct. Mr J. Fraser has gathered *Orchis O'Kellyi* in Surrey growing with, but keeping distinct, from *O. Fuchsii*. That is the opinion of Mr Stelfox and other Irish botanists.

Death has robbed us this year of several most valued members. We have lost our old Secretary, Mr Charles Bailey, who for twenty-two years (1879-1902) well served the Club and most generously supplied the continued deficits which the small amount of realised subscriptions annually involved, and who liberally sent to the Exchange Club large numbers of well-preserved and carefully collected specimens. His years of retirement were happy, as he had the record of a life well-spent behind him and all the comforts of a beautiful home at Torquay and the inexpressible joy of happy marital relationships. Another of our senior members, Mr George Webster, with whom I exchanged specimens in the seventies, died at York, in a district which at one time he assiduously worked, and where he was greatly respected. At one time he was a representative of Messrs Backhouse of horticultural and botanical fame. Miss Hillard, of Hayling Island, has also passed away. Despite the well nigh impossibility of movement due to severe arthritis, but aided by an indomitable perseverance and the kindly help of a most devoted attendant, she was able to explore minutely the district, and the knowledge of that interesting botanical area of Hayling Island was greatly advanced by her painstaking work. She gave much to botanical study and received in return some solace from the almost ceaseless agony which she bore with such fortitude. Prince Roland

Bonaparte of Paris, a more than princely patron of science, a great traveller, the owner of the largest fern herbarium in the world, has died comparatively young and left not only France but the world the poorer for his death. Dr Hellon, of Seascale, a distinguished scientist—a somewhat recent devotee of Botany, was one of those kindly souls who lived to help others along the paths of knowledge. He will be sadly missed by a wide circle of correspondents and friends, and his death shatters the hope one had that from his pen might have appeared a new Flora of Cumberland which is so much needed. Another loss is that of Sir Harry Veitch, the distinguished horticulturist, who added lustre to the name of his firm, and was not less conspicuous for his active benevolence. Another of our most valued members, one of our best field botanists, a past Distributor and Editor of the Exchange Club Report, and one of our most loyal members, Mr J. A. Wheldon of Liverpool, who was a recognised authority on Mosses, Hepatics and Lichens, was taken away late in the year after dark hours of agony. Yet in the intervals of comparative ease, he kept up his interest in our Society to the last. He was a ready helper, a generous contributor of plants, and the University of Oxford owes him a great debt for the pains he took to name its great collection of Lichens and Sphagna. British Botanists are indebted to him and to his colleague, Mr A. Wilson, for that most excellent *Flora of West Lancashire*, which is a fitting testimony to their industry and ability. Of quite a different type was Mr W. Harford, of Petty France—that splendid centaur, one of the hardest of hard riders, who by the irony of fate was killed on opening a gate while riding. So passed he who jumped half the fences in England, and was horse-wise and hound-wise. Few had a keener love for the flowers of the field than Willy Harford, and he ran a rarity to earth with just as much persistence and painstaking zeal as he did the Badminton hounds to their quest. His cheery voice and kindly greeting still ring in one's ear. The Curator of the Cambridge Botanical Garden, R. Irwin Lynch, who had a good knowledge of and liking for British species, died at Torquay soon after his retirement. His inspiriting Curatorship was recognised—not too precipitately—by his University who conferred on him the degree of M.A. Robert Kidston, of Stirling, was a distinguished worker at fossil plants in which he made highly important discoveries while the flora of his own district was materially increased by his investigations. Among the foreign friends we have lost the distinguished mentor in French Botany, the Abbé Coste, a household name with those who study the French Flora. The three volumes, with 4500 figures, which we owe to his untiring zeal, are the best guide to the treasures of that important area. These deaths are serious losses to our Society. It is difficult to replace them, as such a small percentage of the young take up scientific work in their leisure hours. The intense and growing love of games and pleasure proves too formidable a competitor. With the greater remuneration of the school teachers we should obtain many recruits from that section of society.

For literary assistance we are again indebted to Dr S. H. Vines, F.R.S., to the Rev. F. Bennett, M.A., to Mr T. R. Gambier-Parry, M.A., and to Mr R. H. Corstorphine. Colonel A. H. Wolley-Dod has given us a laborious piece of work on the names of the Roses mentioned in our Reports, and we congratulate him upon the completion of his own revision of that difficult genus. We have to thank most warmly Dr A. Thellung for naming so many of our adventive species. We heartily rejoice at his restoration to health. Gratitude is due to Dr Karl Ronniger for naming the Thymes, to H. Dahlstedt for identifying the Taraxaca, to Dr E. Almquist for determining the Shepherd's Purses, to Professor Danser for examining the Docks, and to Dr J. Murr for naming the Goosefoots. Thanks are due to the Rev. F. Bennett for bringing back from Switzerland a large number of Mints which I had sent in 1892 to Dr Briquet for his determination. He had handed them on to another botanist to return them with some Alchemillas—and there they stayed for over thirty years. They include several new varieties to science and many new to Britain. We have to thank Mr J. Fraser for kindly examining them and for his useful notes which are published in this *Report*. So now the Alchemillas, which went with the Mints, are not despaired of, and even the Veronicas from Billot's Exsiccata, which Mr Stratton lent to a continental worker many years ago, may yet be returned.

The beautiful photo-blocks which illustrated the article in our Report of 1924 on the Botanic Garden Tercentenary at Oxford in 1923 were kindly lent by the proprietors of the *Chemist and Drug-*

gist, 42 Cannon Street, London, and our grateful thanks are due to their courtesy.

Our new members for 1924 include Miss Dorothy Meynell, Mrs Brown, Mr R. R. Hutchinson, Mr W. A. Sledge, Rev. D. P. Murray, The Hon. Mrs C. Rothschild, Mrs J. Buchan, Lady Margaret Watney, Mr H. B. Guppy, F.R.S., Prof. J. P. Lotsy, Ph.D., Mrs Hugh Willan, Mr Melville, Mr C. W. James, Mr H. Britten, Mr Paul Furse, the Leicester Museum, Col. J. Saunderson, Miss R. Mason, Mrs M'Crea, Miss King, Mrs Guthrie, Mr J. R. Matheson, Mr H. B. Willoughby Smith, Mr A. Beadell, Mr H. M. Hirst, Mr F. W. Sansome, Miss V. Keppel, Lady Gwendolen Churchill, Mrs Campbell, iss J. and Mrs Smyth-Pigott.

My own field work during the year was not marked with great success. In May a delightful visit was made to Patshull when Lady Dartmouth motored me over Wenlock Edge on the top of which we saw *Cerastium vulgatum*, var. *serpentini* and *Taraxacum decipiens*. Thence we joined the Botanical party at Llanberris, of which Miss Vachell and Mrs Baring have contributed notes. Despite the season's retardation, the party saw most of the characteristic plants of that area, including *Lloydia*, to which Mr T. J. Foggitt conducted the members up a steep scramble on the Glydyr. In the pastures of Snowden and in Nant Gwynnant the abundance of true *Orchis maculata* was a very conspicuous feature. There it agreed excellently with Mr Webster's description of his *praecox*, and was in beautiful flower before *O. Fuchsii* was in blossom. We added *Viola rupestris* to Carnarvonshire, a new Shepherd's Purse, *Bursa odontophylla*, from the railway near Llanberris, and a new *Taraxacum*—*alonicnse* and its f. *recurvilobata*. Aberfraw Common was visited but *Mibora* was well nigh over while *Ranunculus cambricus* was very young and uncharacteristic. *Salix pentandra* was seen as a planted tree. Our search near Portmadoc for *Scirpus nanus* was rendered nugatory owing to the torrential rain of the preceding night which had flooded the area. *Cochlearia micacea* occurred on Snowden ridge with *Salix herbacea*, but the cliffs were very bare of flowers. It seems that the botanist's toll of the Snowdon cliffs, like that of Clova, Caenlochen, Lochnagar, and Lawers has been too heavy, as none of these seem as flowery as formerly. The paucity of Hieracia is especially noticeable. *Asplenium germanicum* still holds its own in Merionethshire. One may add that the twenty-five members who took part in the excursion enjoyed themselves thoroughly, not the least happy day being that spent on the Great Orme where it was pleasing to see Cotoneaster still survives. I believe there are only about five individuals in all. It was a happy idea to have a specimen planted in the charming rock work of the Orme.

A month in March and April was spent in Majorca or Mallorca—a beautiful island which has been well explored by Mr J. Walter White. It enabled us to see most of its endemic species, but we were too early to obtain *Ranunculus Weyleri*, which is limited to a few square yards at an elevation of over 4000 feet, on the Puig Major. l/ A new locality for the rare and diminishing *Leucojum pulchellum* was found and *Moricandia arvensis*, *Anthriscus sylvestris*, *Sagina procumbens* and *Artemisia arborescens* (the two last perhaps introduced at Miramar) seem to be additions to the island flora. The weather was all that could be desired, the sea passages smooth, the boats comfortable and clean, and the people most kindly, while the scenery, especially on the western side, was highly attractive. Sollier is a delightful land-locked port dominated by the highest mountain of the island, the Puig Major of over 5000 feet. We climbed this to nearly 4000 feet. One of the features here and elsewhere in the island was the abundance of *Ophrys speculum*, and the endemic *Cyclamen balearicum*, which Lobelius figured as *C. vernum* in his "Icones" with its small white flowers much in evidence. High up grew *Buxus balearica*, and in the adjoining Barranc we obtained the rare and local *Brassica balearica* and an endemic *Viola*, as well as the more generally distributed *Polygala rupestris* with its purple blossoms. We also saw *Lonicera balearica*, *Taraxacum obovatum*—a distinct species, *Globularis vulgaris*, var. *major*, *Micromeria filiformis* Benth., *Orchis lactea*, *O. longibracteata*, etc. *Melilotus sulcata* grew in the lower orange groves and in the valley, *Lotus creticus* at the Port, *Vicia gracilis*, *Sibthorpia africana*, *Orchis longicornis* Poir., *Ophrys Bertolonii*, *O. fusca*, *Habenaria intacta*, *Trifolium scabrum* and many other species. The hotel, though simple, was most clean and comfortable and the landlord extremely kind. The drive back to Palma was very enjoyable. One has no space to give in detail the many interesting species found in this delightful area which would repay much longer time than we could devote to it.

At the beautifully situated Miramar grew *Anthyllis cytisioides* as unlike an *Anthyllis* as possible. As its specific name indicates it is more like a *Cytisus*. There grew also *Hippocrepis balearica* the striking Composite, *Urospermum Dalechampii*, and an endemic *Crepis* allied to our *taraxacifolia*. The Ivy of the island is more frequently our var. *sarniensis* as at Valdemosa. *Kentranthus Calcitrapa* was by no means rare. The curious parasite, *Cytinus Hypocistus*, var. *rubra*, grew at Inca where were *Carex divulsa*, *C. vulpina* and *Dactylis hispanica*. The strange *Withania somnifera* was local at Belver, and here grew *Bartsia Trixago* and several Echiums. *Asteriscus* was abundant and showy. At Pollenza we obtained *Tolypella glomerata*, *Carex punctata*, *C. serrulata*, and *Artemisia gallica* (not given for Mallorca by Cambessedes). Near Palma *Papaver Rhoeas* appeared as var. *caudatifolium* Fedde, and here, too, grew *Succowia balearica*, a common Crucifer. *Arenaria procumbens*, a reddish-flowered species, was local. *Lavatera cretica*, *Frankenia hirsuta* and *Ononis reclinata*, var. *mollis* (Savi) occurred. The Medics were abundant. *Chrysanthemum Coronarium*, var. *alboradiatum* grew with the type. We also saw *Rapistrum Linneanum* and *Phalaris minor* (omitted by Cambessedes). That author speaks of *Poa bulbosa* being rare. We saw it in many places on the western side of the island. At Aminol we found *Cistus Clusii* and several *Helianthemums*. In a pretty valley near Genoa grew *Teucrium majoricum*, *Serapias Lingua*, *Orchis coriophora* and *Carex Linkii*. The beautiful and fragrant endemic *Hypericum balearicum* with its elegant crisped leaves was locally common with *Anthyllis rubra*. Andraitz was a delightful bay, and the approach to it highly romantic and pleasant. Here we obtained *Helianthemum Barrelieri* Tenore, the beautiful but prickly *Genista lucida* and *Coronilla juncea*. Altogether about 550 species were noted. We were too early to see in flower the two endemic Umbelliferae.

An expedition to the Roman Camp at Chedworth in Gloucestershire afforded a good gathering of *Euphorbia virgata* in Oxfordshire. In the latter part of June a visit was made to Denmark where an enjoyable fortnight was spent and where one had the opportunity of meeting Professor Ostenfeld and seeing the excellently kept Botanical Garden which is under his care. There, too, one examined the splendid series of the Spotted Orchid in the Herbarium. Both the true *maculata* and *Fuchsii* are well represented in that country where, as with us, in the main the former grows on acid while *Fuchsii* occupies calcareous soils. I noted 430 species of plants in my visit of which only a very few were not British. Among these was *Arnica montana* growing at a low altitude. Denmark, it may be said, has an area of about 43,000 square kilometres (the Faroes in addition are about 1400 kilometres) and there are over 100 inhabited islands. Of this area about 33,000 square kilometres are cultivated. There are large tracts of heathland as yet uncultivated and in some of these near Esbierg we saw *Arnica montana*. The highest point is the Himmelbierg, which, although less than 600 feet high, is so well proportioned as to be really mountain-like. On it we saw *Pyrola*, and in woods in the neighbourhood with other plants, *Maianthemum*, *Polygonatum verticillatum*, and *Phyteuma spicatum*. On the island of Fano we saw the Zetland form of *Lathyrus maritimus*, var. *acutifolius* Bab., and there too was a flora like that of the Norfolk breck-land with *Scleranthus perennis*, *Silene Otites*, *Weingaertneria canescens*, *Phleum arenarium* as its constituents. In bogs in close vicinity grew *Carex limosa*, *Oxycoccus micropetalus*, *Utricularia*, etc. As a roadside weed in heathy places *Lychnis Viscaria* was not unfrequent. *Euphorbia virgata* was seen near Elsinore as well as *Allium Scorodoprasum*. The latter, like the Norfolk broads, had the White and Yellow Water Lilies, as well as *Cicuta* and *Sium latifolium*.

In early July, accompanied by Mr T. Gambier Parry, a visit was paid to Jersey to try and see *Myosotis sicula* in situ, but the marshy spot was quite dried up and yielded no *Myosotis*. *Galium debile* was, however, found in the vicinity. When in Jersey a painting of a plant was sent to me to corroborate. It was the Epipogon from Oxfordshire, so I hurried back in order to make a search, staying for the night in Corfe Castle in order to see the Calamint on the Castle, which Mr Pugsley refers to *baetica* (*Satureia villosa*). A night was spent at Highnam with its fine arboretum and magnificent early Italian paintings and then a two days' search in the Oxfordshire wood revealed a single specimen of *Epipogon*, which enabled me to give to the British Museum my Ludlow specimen. *Epilobium Lamyi* and *Hypericum Desetangii* were added to the

Oxford flora, and Dr H. Smith showed me an abundance of *Lotus siliquosus* in Berkshire. A short visit was paid to Sir Roger Curtis at Lichfield where *Potamogeton Cooperi* and *Lintoni* were still growing in the Canal. The *Hieracium stoloniflorum* at Hanslope in Berks has now reached to the western side of the railway in some plenty so that it evidently ripens its fruits. *Anthemis tinctoria* is also still very abundant there. A new and native locality for *Muscari* was found near Witney in Oxfordshire. August was spent in Zetland with Prebendary Burdon, and the results of our hard work are given elsewhere in the *Report*. They include a new species of *Thymus* which I found on the summit of Ronas Hill, and which Dr Ronniger and I have named *T. zetlandicus*. We also saw some new Shepherd's Purses. There the rainfall was less than usual. We returned from Lerwick to Aberdeen and then went to Braemar and there met Mr and Mrs Corstorphine, and Mrs Wedgwood, and climbed Lochnagar, finding *Carex Lachenalii* in Dickie's locality (where I last saw it in 1892), and with, or rather near it, *C. helvola* in quantity, both these plants having been seen earlier in the year by Lady Davy, Miss Vachell, Mr Butcher and other of our members. On August 27, with the Hon. Mrs Adeane and Miss V. Keppel we climbed the mountain again from the Alltnaguisach side and obtained some more of the Rumex which Prof. Danser names *arifolius*, but it was not in good condition. A recent cloudburst had covered much of it with debris. *Alchemilla glomerulans* was also seen, but the *Hieracia* were in poor show, and we were unable to find *Gnaphalium norvegicum*. So bad was the season that even *Veronica alpina* and *Saxifraga rivularis* were in poor quantity. *Bursa patagonica* grew at Ballater. In September with Mrs Wedgwood and the Rev. H. J. Riddelsdell, Amershan was visited in order to see *Rubus uncinatus* in Mr Britton's locality. Later on Colchester was visited with Miss Trower, and a rich lot of alien plants—chiefly from Syrian barley—was seen at the Hythe Dock where Mr G. C. Brown had previously seen them. Among them were *Xanthium strumarium* and some interesting Chenopodiums. At the station near Berechurch for *Filago gallica* we found *Ornithopus roseus* with *Filago apiculata* and *Arnoseris*. At Abingdon in Berkshire was found *Chenopodium solitarium*, a rare plant even on the Continent. In October, under the kind guidance of Mr R. Smith and Mr Melvill, the docks at

Barry and Cardiff were explored. They are rich in Mediterranean species, and it is somewhat difficult to decide in what manner they are brought to our shores. Later on Mr R. Smith and Mr Wade will publish an account of them in one of our Supplements. They showed me over 70 adventive species in situ, and Miss Vachell kindly directed me to Victoria Park where the sweet-scented *Cuscuta suaveolens* was parasitic on *Nepeta Mussini*.

We offer to Mr J. H. Maiden our hearty good wishes on his retirement from the directorship of the Sydney Botanic Gardens, a post which he has occupied with distinguished success since 1896. His important work, " A Critical Revision of the Genus Eucalyptus " is now in the seventh volume. It is illustrated by 225 plates. Eight more parts will complete this gigantic work. His " Forest Flora of New South Wales " in eight volumes with 29 quarto plates is now completed. Mr Maiden filled the office of President of the Royal Society of New South Wales in 1896-7 and again in 1911-12. He received the Linnean Gold Medal in 1915, and was elected into the Royal Society in 1916. A portrait of this distinguished worker at the Australian Flora appeared in the Gardeners' Chronicle 400, 1924. We wish him long years of happiness in his new home.

We congratulate Dr Drummond on his appointment to the chair of Botany at Glasgow University and we hope his genial and able predecessor, Dr Bower, may have a long period to enjoy the honour of Emeritus Professor. We note with pleasure that Mr James Jack, who has done much good algological work, has been co-opted on the Council of the Pharmaceutical Society of Great Britain, and that Mr R. H. and Mrs Williamson of Seascale have generously presented to Seascale " St Cuthbert's Church Hall," a handsome and most useful building. Our best wishes are offered to Mr A. Bruce Jackson, one of our Distributors and Editors of the Exchange Club Report, on his receiving the Veitch Memorial Medal of the Horticultural Society. There is an article and portrait of him in the Gardeners' Chronicle 44, 1924. We are also very glad to see that Dr M. C. Rayner, the joint author with her husband, Prof. W. Neilson-Jones, has been awarded a " Theresa Seesel Research Fellowship " in the Graduate School of Yale University of the value of 1500 dollars. It was founded to promote original research in biological studies. Dr J. Burtt, the well-known worker at the South

African Flora, had the degree of Ph.D. conferred on him by the University of Cambridge. His portrait appears in the Gardeners' Chronicle 266, 1924, and it is good to know that Oxford is to have the advantage of his services in the School of Forestry. Our members will be glad to see that the distinguished services of the late Speaker, the Viscount Ulleswater, were recognised by the Corporation of London which granted him the Freedom of that City on February 14, 1924, the document being enclosed in a handsome gold casket.

It is very pleasing to notice that Mr Noel Sandwith, who discovered *Scorzonera* in Dorsetshire, has become connected with Kew, which has also obtained the services of Mr A. R. Horwood, one of our Distributors, and Mr R. Butcher, the discoverer of *Tillaea aquatica* in Yorkshire. The interests of British Field Botany will be strengthened by these appointments. We gladly notice that Mr A. B. Rendle, F.R.S., has consented to edit the *Journal of Botany* on the death of Mr J. Britten who had acted in that capacity since the retirement of Mr Henry Trimen in 1880.

PLANT NOTES, ETC., FOR 1924.

(*Mostly New Plants to the British Isles or Notes on British Species inserted here for Convenience of Reference.*)

ABBREVIATIONS.—† before a name signifies the plant is not native; × = a hybrid; ± more or less; ! after a locality, that the Secretary has seen the plant there; [ ] that the plant is not British or the record is doubtful; *Ann. Bot.* = *Annals of Botany; Bot. Abstr.* = *Botanical Abstracts; Gard. Chron.* = *Gardeners' Chronicle; Ir. Nat.* = *Irish Naturalist; Journ. Bot.* = *Journal of Botany; Nat.* = *The Naturalist.*

22. RANUNCULUS BULBOSUS L., forma APETALA. Mr St John Marriott sent a peculiar plant from Dartford Heath, Kent, growing on a hedge bank. It has much divided leaves cut into narrow segments. The flower is nearly sessile, and has stamens and pistils only. G. C. DRUCE.

Forma SULPHUREA Druce. Differs from the type by its very pale sulphur-coloured flowers. Found by Miss AGATHA WILKINSON on the Abberley Hills, Worcestershire, in May 1924.

24. R. FLAMMULA L., forma PARVIFLORA mihi. In a marsh near Pontac, Jersey, July 1924. Here it occurred as a tall plant with very small flowers, ¼ in. across. At a distance it suggested *ophioglossifolius*, which is now extinct in its old station at St Peter's Marsh, Jersey. G. C. DRUCE.

28. R. SARDOUS Cr., forma PROSTRATA. Differs from the type by the perfectly prostrate growth. Freshwater, Isle of Wight, 1924, ERIC DRABBLE. Dr Drabble has had the plant under observation and finds that the fruits are sterile; he believes it to be a hybrid. Its associates are *R. repens* and *R. acris*. Its prostrate growth suggests if it is a hybrid that *repens* may be the parent, but hybridity is very

rare in the Ranunculi. In the dried state I cannot find evidence of that, and shall look forward to Dr Drabble's further investigations. I have seen prostrate *sardous* in saline meadows in Hampshire.

33. R. GRAMINEUS L. See "Dubious Plants," *Rep. B.E.C.* 740, 1919. Miss I. M. Roper, F.L.S., tells me that she has come across a specimen labelled " Lundy Island " in the Stephens Herbarium at Bristol, which was made about 1850, and has been the property of the Bristol Naturalists' Society for the past forty years. Dr D. O. Stephens was a local medical man who wrote about Bristol plants, 1835-1850. In *Rep. B.E.C.* I quoted from the *Phytologist* of 1855-5 that Mr Baker told the editor that Mr Etheridge of Bristol had recently found it in Lundy Island, but, despite the editor's appeal for a specimen and history of its discovery from the sender, no reply appears to have been forthcoming. Robert Etheridge, F.R.S., lived, says Miss Roper, at Bristol for about 20 years from 1840 onwards, and was curator of the Bristol Institution which developed into the City Museum, so that his period of work well overlapped that of Dr Stephens. It would be remarkable if this were Etheridge's specimen, but it is neither dated nor localised, and Etheridge scarcely could be ignorant of the importance of his find. Even the original record reached the *Phytologist* at second hand through a Mr Baker. Therefore, it still remains as a dubious British plant, but the locality should be carefully searched on the chance of its being refound. In those days labelling of specimens was more perfunctory than now, and I have seen books with the known localities for the plant filled in, and it would not follow that if the specimen was gathered elsewhere the habitat would be corrected.

24 (2). BOCCONIA (Plumier) L.

88 (2). B. CORDATA Willd. Sp. Pl. ii., 1841. Alien, China. Hortal. On waste ground, Colchester, 1924, G. C. BROWN. Named by Plumier after Paul Boccone of Savona and Palermo, a Cistercian, who wrote on Sicilian and other plants.

37 (2). THELYPODIUM Endl. Gen. 876, 1839.

140 (1). T. LASIOPHYLLUM Greene in Bull. Torrey Club xiii., 142 1886. Alien, Amer. bor.-occ. *Turritis lasiophylla* Hook. and Arn.

in Beech. Voy. 321, 1841. *Sisymbrium reflexum* Nuttall in Journ. Acad. Philadelph., n. 5, i., 183, 1847. Tips, Robroyston, Lanark, R. GRIERSON.

191 (4). SISYMBRIUM RICHARDSONI Sweet (DESCURAINIA RICHARDSONI O. E. Schulze). Alien, N. and W. America; adv. in Holland. Byfleet, Surrey, Lady DAVY. Det. A. THELLUNG.

212 (2). BRASSICA FRUTICULOSA Cyr. Pl. Rar. ii., 7, t. 1. Alien. Portugal, Spain, Sicily, Naples. Cardiff (112), R. L. SMITH. Shown me there in some quantity by Smith and Melvill last October. A distinct and pretty species. Det. A. THELLUNG.

232. BURSA ODONTOPHYLLA (E. At.). Native. Railway-side. Llanberris, Carnarvon, June 1924, G. C. DRUCE.

232. B. LUTETIANA (E. At. ii., 74, class viii.). Native. Spiggie, Zetland, Aug. 1924, G. C. DRUCE. Leaves sinuate, or with large lobes; stem bifida, foliosa, often multicaulis; wr. rather numerous, seldom budding; capsules 7 x 5, with almost straight lateral margins; notch rather deep. From Paris (cultivated), Lille, Brussels and United States—St Louis and Kansas. E. ALMQUIST.

232. B. SINUOSA (E. At. ii., 88, class xii.). Scalloway, Lerwick, Spiggie, Zetland, Aug. 1924, G. C. DRUCE. Leaves entire or a little incised, with acuminate lobes; stem bifid, often foliosa, with weak branches; sometimes bushy. Wr. few; capsules 7-8 x 5-6, convex, or scoliotic, or cuneiform; notch more or less deep, with rounded lobes. From Trier (cultivated), Brussels, Lausanne; U.S.A.—Kansas. E. ALMQUIST.

232. B. ROBUSTA (E. At. ii., 86, class xi.). Waste ground, Abingdon, Berks, Oct. 1924, G. C. DRUCE. Leaves broad, entire or sinuate, much indented; stem foliosa, bifida, multicaulis, with long firm branches; wr. numerous, with broad short leaves, denticulate; pedicels long; capsules 8-9 x 5-6, lateral margins very convex; notch deep. From Bremen (cultivated), Stockholm, Ghent, Grenoble. E. ALMQUIST.

350 (3) SILENE PSEUDO-ATOCION Desf. Fl. Atlant. i., 353. Alien.

Balearic Isles. Waste ground, Bembridge, Isle of Wight, T. O. W. Det. A. THELLUNG.

385. ARENARIA TRINERVIA L., var. HYEMALIS D'Urban *in lit.* This differs from the type in flowering through the winter, in its being a stiffer and much more branched plant, especially in the upper part, where there is a quick transition in the size of the leaves of the main stem, which are firm in texture, short and broadly ovate, to those of the copiously branching ramifications on which the leaves are less than half the size of the lower ones. The flowers are smaller than those of the type, both as regards sepals and petals. The stamens are not more than seven in number. Locality under trees and on wall-tops, Countess Wear, S. Devon. W. S. M. D'URBAN, Nov. 1924. One may add that the sepals are less strongly nerved, and when fresh are barely discernible. It forms an approach to *A. pentandra* Dufour, from which it differs in its laminae and their nerves being ciliate, in the larger number of (7 as against 5) stamens, in the less strongly marked (when there are more than three) leaf-nerves, and in the smoother seeds; from *Moehringia erecta* Mart.-Donos (*Fl. Tarn.* 106, 1864) it differs in being less pubescent, the upper leaves are spreading, the upper branches are not erect, nor is the plant simple, stiff and slender. Rouy & Foucaud (*Fl. Fr.* iii., 256) cite the *Eng. Bot.* plate, 1483, for *M. pentandra*, but in error, as the leaf-nerves are shown to be ciliate. In the details of the flower added in the third edition (t. 234) the flower has ten stamens. *A. pentandra* may be found in Britain, indeed see *Camb. Fl.*, where Mr Carter collected a plant in Devonshire "which seemed to be it," but of which nothing more has been heard. It may be added that the name *trinervia* is misleading, as the nerves vary from 3 to 5 in number. G. C. DRUCE.

396. A. VERNA L. See *Rep. B.E.C.* 31, 123. Mr C. C. Lacaita writes that "in Italy the plant is quite indifferent as to soil, and certainly knows nothing about lead." Its distribution in England is discontinuous, and it has yet to be proved that lead is found in all its habitats. It must also be borne in mind that it is a variable plant. Can these variations be connected with soil constituents?

436. HYPERICUM PERFORATUM × QUADRANGULUM, vel H. PERFORA-

TUM × DUBIUM. By the Leader near Easton, Roxburgh, Sept. 1914, Miss I. M. HAYWARD. Mr C. E. Salmon suggests this parentage. The two-angled stem, etc., is *perforatum* evidence, whilst the broader, blunter sepals, imperfectly dotted blunter leaves, pellucid veins, etc., all point to another parent.

439. H. ELODES L. (HELODES PALUSTRIS Spach), nov. forma GLABRATUM. Differs from the type by the leaves being nearly glabrous. On banks of dug-out ditches, Lyndhurst, S. Hants, 1924, Miss TODD ; Burnham Beeches, Bucks, 1922, G. C. DRUCE.

497 (3). GERANIUM IBERICUM Cav. Diss. 209, var. PLATYPETALUM (Fisch. & Mey.) Boiss. Alien, Caucasus. The Mound, E. Sutherland, quite naturalised in a wood, July 1923, G. C. DRUCE ; Abergavenny, Monmouth.

531. LABURNUM ADAMI = CYTISUS ADAMI. This interesting graft-hybrid of *Laburnum Laburnum* and *Cytisus purpureus* fruited this year at the Botanic Garden of Holloway College, and Miss E. M. Blackwell showed specimens at the Linnean Society on November 20. The tree bore fruits of (1) *L. Laburnum*, (2) of *C. purpureus*, and (3) of *C. Adami*. Hildebrand has shown that in 1904 two seeds of it were obtained, but that from these two seeds typical *Laburnum* plants resulted.

640 (2). TRIFOLIUM BECKWITHII Brewer, ex. S. Wats. in Proc. Am. Ac. xi. 128, 1876, Calif. Burton-on-Trent, Derby, on waste heap.

643. DORYCNIUM HERBACEUM Vill. Messrs Melvill and R. L. Smith showed me this pretty southern species *in situ* at Barry Docks, Glamorgan, in October 1924. My note on it, through the absence of a comma, is misleading. It should run—"The flowers are touched at the tip with pale blue, not black." Mr C. C. Lacaita says that he believes " it to be the true Melilot of the ancients . . . In the south of Italy whole hillsides are covered with it in some districts, and, especially towards evening, it fills the whole air with a most delicious scent of honey, which is not possessed by any of our Melilot species."

741 (2). PRUNUS CERASIFERA Ehrh. Beitr. iv. 1789 (*P. divaricata* Ledeb. Ind. Hort. Dorp. Suppl. 6, 1824). Alien, Oriens. This is the plant which was sent to the Club in 1922 by Mr L. Cumming as *P. domestica* (see *Rep. B.E.C.* 832, 1922). Dr Thellung identifies it as above. It is the Myrobalan Plum, and, of course, a planted tree in Britain. It came from a hedge in Kilsby village, Northants.

786. RUBUS ULMIFOLIUS Schott (RUSTICANUS Merc.). Near the Manoir de la Trinité, Jersey, 1924, ATHELSTAN RILEY. In this curious plant the blossoms are completely double, all the stamens being petaloid, the petals being very narrow, almost linear, but pointed at apex. The blossoms are about an inch across and of a pretty rose-pink colour. I name it lusus (vel var.) FECUNDISSIMUS. G. C. DRUCE.

917 (2). ACAENA LAEVIGATA Ait. Hort. Kew., ed. 2, i., 68, 1810. Alien, Straits of Magellan. Hortal. Introduced in 1790. From Levenhall, Edinburgh; cult. at Shipley by Mr J. CRYER.

966. CRATAEGUS MONOGYNA Jacq., var. MASONII Druce. The Rev. W. Wright Mason this year sent me from Melmerby, Cumberland, specimens of a hawthorn which is distributed through the Club. It differs from the type in the flowering-branches being pendulous, that is, the flowers are turned downwards. Although the calyx-tube is practically glabrous, there appears to be no crossing with *C. oxyacanthoides*. The styles are usually curved. G. C. DRUCE.

972 (4). COTONEASTER BASCILARIS Wallich, f. OBTUSA Dippel. Alien, India. Slinfold, Sussex, A. WEBSTER (see *Rep. B.E.C.* 389, 1923). Det. A. THELLUNG. Doubtless planted.

1043. LYTHRUM SALICARIA L., var. ALTERNIFOLIUM (Lorey) Coss. & Germ. Fl. Env. Paris, ed. i., 2, 188. *L. alternifolium* Lorey Fl. Côte d' Or. In a china clay quarry, Newton Abbot, S. Devon, C. J. COOKE. This differs from the ordinary form in having alternate leaves and spikes of fewer flowers. See Rouy & Camus *Fl. Fr.* vii., 158. G. C. DRUCE.

1067 (2). OENOTHERA CATHARINIENSIS Camb. Alien, temperate S. America. Avonmouth Dock, W. Gloster, 1923, N. SANDWITH

1100. CICUTA VIROSA L. A large plant with secondary umbels arising from a base of flowerless involucral bracts. Ormesby Broad, Norfolk, E. M. REYNOLDS.

1115. CONOPODIUM MAJUS Loret, var. vel lusus. Sent by the Rev. W. Wright Mason from Melmerby, Cumberland, who noticed it growing with the type, from which it differs in the greener tint of the flowers, and especially in that each flower is composed of many petals, the stamens in most cases having become petaloid. At a distance the umbel suggests that of *Meum*. G. C. DRUCE.

1151. PEUCEDANUM SATIVUM B. & H. Exhibited as *Pastinaca sativa* at meeting of Linn. Soc. (no. 439) December 19, 1924, as a remarkable cut-leaved plant which occurred at Norton Common, Letchworth, Herts, by Mr W. Percival Westell. Known since 1915, it has been raised from seed. Mr C. E. Salmon suggested that it was *Pastinaca Fleischmanni* Hladn. *Peucedanum Fleischmanni* (Hladn.) comb. nov. is a very rare plant, only recorded from Carniola by Nyman. G. C. DRUCE.

1155. TORDYLIUM MAXIMUM L. This adventive species was included in my "Extinct and Dubious Plants of Britain," which appeared in the *Report* for 1919, as it had not been recorded since 1877, when Dr Eyre de Crespigny found it at Tilbury, Essex. This year Mr W. G. Clarke kindly sent me a note of its occurrence in E. Norfolk at Arminghall, where it was found by Mr P. Looker. In answer to my enquiry Mr W. G. Clarke kindly says that Mr P. Looker, an able teacher at the Technical Institute, was out gathering specimens for his class last July when on a waste heap in a field, he found an Umbellifer which he had never seen previously. He worked it out carefully by "Hayward," and came to the conclusion that it could be nothing but *Tordylium*. He took part of the plant with flower and fruit to the senior class, and without any lead they also tracked it to *Tordylium*. Unfortunately, when the spot was revisited the rubbish-heap had been carted away and so Mr Clarke was unable to verify the identification. Nevertheless, he is convinced that *Tordylium* was found, and that there would have been a voucher except for the fact that Mr Looker never presses specimens. It is a plant that may turn up in any southern county as an adventive species.

1167 (2). CAUCALIS GRANDIFLORA (Boissier as *Torilis*, not of Linn.), var. ACULEATA (Boiss.), comb. nov. *Torilis microcarpa* Bess. Enum. Pl. Volhyn. 43, 1822, var. *aculeata* Boiss. Fl. Or. ii., 1081. Alien, Russia; Asia Minor. Buildwas, Salop, 1909, W. B. ALLEN, ex J. C. MELVILL *in lit.* The *Caucalis microcarpa* of Hooker and Arnott Beechey Voy. 348 is a totally different plant, and, unless the permanence of the original trivial is always to be maintained, prevents our using Boissier's *microcarpa* under *Caucalis*.

1198 (2). GALIUM DEBILE Desv. Obs. Pl. d'Anjou 134, 1818. Caulibus flaccidis, debilibus, basi radicantibus, erectis, quadrangulis, inangulis prominentibus remote minuteque scabriusculis vel sublaevibus; foliis in verticillis 5-6, internodiis elongatis, multis, brevioribus anguste linearibus vel supra medium parum latioribus, obtusiusculis vel acutis, muticis, nervo dorsali tenui parum prominulo, margine leviter revoluto minute scabris (aculeolis adscendentibus); panicula laxa, corymbiformi, e ramis elongatis, erecto-patulis, apice cymigeris composita, cymis trichotomis, apice glomerulos densifloros gerentibus, pedicellis flore fructuque brevioribus; corolla alba, extus rubella, lobis acutis, fructibus jam ante maturitatem papilloso-granulatis. Willkomm & Lange *Prod. Fl. Hisp.*, ii. 322. The habit is much that of *Asperula cynanchica*. This is placed by Rouy (*Fl. Fr.* viii., 44) as a sub-species of *G. palustre*. Under *G. debile* he puts *Witheringii* as a variety. Grenier & Godron (*Fl. Fr.* ii., 40) also draw attention to the resemblance it bears to *Asperula cynanchica*. They quote as synonyms *G. constrictum* Chaub. (which has broader leaves) and *G. uliginosum* Mérat, non L., and they give as a variety *congestum* (Jord.). Rouy also gives as varieties *humile*, *congestum*, and *constrictum*. Coste (*Fl. Fr.* ii. 243) makes *constrictum* to be synonymous with *debile*, and gives a figure. Our plant varies from 4-14 inches high, and is a small-leaved strict flowering plant with narrow inflorescences owing to the pedicels not spreading. The leaves are narrower and more strictly linear, and less rough at the edges than those of *Witheringii*. Habitat: Marshes at St Brelade, Jersey, 1924; L'Ancresse, Guernsey, 1906. To this may be referred, I think, specimens gathered by Miss Todd at Lyndhurst in 1924, and by Mr T. F. Rayner from moist pasture by Hatchett's Pond, Beaulieu, S. Hants. Specimens from marshy meadows near Grendon, Bucks, and from Halton in that county, and from

Beaumont, Jersey (1906), which Professor Glück said were probably *debile*, have wider leaves and more spreading inflorescences than the St Brelade plant. I named them, ad interim, forma *angustifolium* of *G. palustre*. There is another small-leaved plant, *microphyllum* Lange, which is common in Zetland and which I have seen at Darkadale in the Orkneys, but this differs in its firmer texture, by the leaves being less truly linear although quite small, and by the more open panicle with very few flowers. *G. palustre* and *debile* differ in a somewhat analagous way to that of *G. Mollugo* and *G. erectum*. Whether the asperities (*papillose-granular*) on the fruit are constant differences I am unable at present to say. Nyman (*Consp.* 327) divides the *palustre* set into four species—(1) *debile* of Hoffmansegg and Link, confined to Portugal and Galicia, which is an untenable name owing to *debile* of Desf. being two years earlier: (2) *constrictum* Chaub., under which is put *debile* of Desf., which is found from Spain and France along the Mediterranean as far east as Eubaea; (3) *G. elongatum* Presl, which they make synonymous with *G. maximum* Moris, and (4) *G. palustre* L. The European distribution is not antagonistic to *debile* being a native of the Channel Isles and south-western England.

1297 (2). RUDBECKIA AMPLEXICAULIS Vahl in Skriv. Nat. Selsk. Kjset. ii., 2-29, 1793. *R. amplexifolia* Jacq. Ic. Pl. Rar. iii., 16. t. 592. Alien, Southern U.S. and Mexico. Waste places at Benthall House, Broseley, Mr G. POTTS, ex J. C. MELVILL *in lit.* See *Journ. Bot.*, Aug. 1924.

1304 (5). SPILANTHES DECUMBENS (Sm.) Moore (S. ARNICIOIDES DC.), ? var. MACROPODA (DC.) Moore in Proc. Am. Acad. Arts & Sc. xiii., n. 20, 550, 1907. Alien, Brazil; Uruguay; adv. in France and Holland. Paradis, Guernsey, 1923, C. G. TRAPNELL, Mrs HICHENS, Mr TOMLINSON, etc. See *Rep. B.E.C.* v., 33, 1917, when Mrs Sandwith found the var. *leptophylla* at St Philip's, Bristol. Mr F. Robinson also sent to the Botanical Exchange Club the same plant labelled *Buphthalmum* and *Anthemis* from St Ouen's Bay, but I think by a slip of the pen he wrote the wrong locality. I have never seen it there.

1349 (3). ANTHEMIS MACRANTHA Heuff. in Flora xvi., 362, 1833.

Alien, Austria. Hortal. Quite naturalised on a high bank near Fishguard Hotel, Pembroke, April 1923, G. C. DRUCE. Distributed in 1924. Named at Kew.

1400. SENECIO SYLVATICUS L., nova forma DISCOIDEUS. Miss COBBE sent me specimens gathered on Walney Island which had no ray-ligules but only tubular florets. Rouy says ligules always present, although often very small, and I cannot find any reference to a discoid form. At Seascale, Miss Cobbe says *sylvaticus* had the normal flower-heads.

1408 (14). S. MIKANIOIDES Otto. See *Rep. B.E.C.* iii., 475, 1913. A South African species, which I have gathered naturalised in the Azores, has been sent by Mr N. SIMPSON from a wall near St Catherine's, Jersey, 1923, ex Miss VACHELL, and from the same vicinity by Bro. L. ARSENE in 1924.

1408 (15). S. INAEQUIDENS DC. Prod. vi., 401. Alien, South Africa. Waste ground, Bradford, Yorks, 1919, J. CRYER. In the *Index Kewensis* it is placed subordinate to *S. pellucidus* DC. Prod. vi., 380.

1645. TARAXACUM GLAUCINUM Dahlstedt in Bot. Notiser 177, 1909. Folia glaucescenti-viridia, pallida, glabra; petiolis angustis ± alatis, pallidis v. marginibus inferne laete violaceis, lobis deltoideis brevibus usque subfalcatis ± elongatis, apicibus ± patentibus—porrigentibus, in margine superiore ± dentatis—valde subulato-dentatis, interlobiis latiusculis brevibus-elongatis angustioribus inaequaliter et longe subulato-dentatis, lobo terminali triangulare-hastato, lobulo apicali saepe angusto lineari sat acuto. *Scapi* plures, vulgo pallidi glabri, folia aequantes vel sat longe superantes. *Involucrum* 10-12 mm. longum, 6-7 mm. latum, squamis exterioribus ± patentibus, inferioribus ovatis, ovato-lanceolatis, superioribus lineari-lanceolatis ecallosis, leviter callosis (paucis interdum corniculatis), apice ± roseo-violaceis sat late et conspicue albido-marginatis, interioribus linearibus sub apice roseo-violaceo leviter callosis-breve corniculatis. *Calathium* 35-45 mm. latum, parum radians, laete luteum. *Ligulae* marginales subtus stria violacea notatae. *Antherae* polline carentes. *Stylus* luteus, stigmatis

fuscis. *Achenium* lucide rubrum, apice sat longe et anguste spinulosum, 3.3 mm. longum, 1 mm. latum, pyramide 0.8 mm. longo, rostro 10 mm. longo. Sweden: Smaland, Westgothland, Dalsland. Allied to *T. fulvum* Raunkier and *T. limbatum* Dahlst. Chichester, Sussex, as a modification, July 1923, G. C. DRUCE.

1645. T. ALONIENSE Dahlstedt. Sect. VULGARIA. Grendon Underwood, Bucks [AA. 79]; probably this from Ivinghoe, Bucks; Llanberris, Carnarvon, June 1924, with a forma RECURVILOBATA Dahlst. G. C. DRUCE.

1645. T. ANCISTROLOBUM Dahlst. Tarax. Scand. Exsicc. Fasc. ii., n. 16, 1912, et Tarax. Vastra Norge 27, 1923-4. Folia glabra, leviter pilosa, obscure (canescenti-) viridia, subtus pallidiora, magna-maxima, lata ± obovato-oblongo, lobis valde approximatis, v. interdum ± distantibus, interlobiis brevibus v. rarius longioribus, ± latis integris v. ± dentatis sejunctis, superioribus vulgo integris saepius valde hamatis, inferioribus magis patentibus et ± dentatis, obtusiusculis, breve acutis, summis saepe obtusis, inferioribus magis acutis, lobo terminali in fol. ext. et intermed. ± brevi hastato, marginibus ± convexis, breve acuto v. sub-obtuso, in fol. interioribus magno—maximo ± obtuso lato-latissimo, interdum ± elongato, lobatis basalibus vulgo valde hamatis ± obtusiusculis-obtusis; petiolis (interdum leviter coloratis) et nervo mediano pallidis. *Scapi* longi pallidi, inferne interdum ± roseoli, glabri v. apice leviter araneoso-pilosi. *Involucrum* magnum breve et crassum, ± atroviride, basi ovato-truncato. *Squamae* exteriores reflexo-patentes, suberectae, interdum laxe adpressae, ± anguste ovato-lanceolatae, v. lineari-lanceolatae obtusiusculae, breve acuminatae, apice obtuso saepe leviter coloratae, in pag. interiore violascentes, olivaceo-virides, v. ± violacentes vix v. levissime marginate, quam squ. interiores vulgo paullo breviores; interiores lineari-lanceolatae apice angusto obtusiusculo. *Calathium* magnum—maximum 50-60 (70 mm.) diametro, radians. *Ligulae* luteae angustae, marginales extus stria lata, rubro-purpurea ornatae. *Antherae* polliniferae. *Stylus* et stigmata fusco-virescentes. Norway: Christiania, Bergen, etc. A modification of this occurs at Yarnton, Oxon [AA. 81]; Mansfield College Grounds, Oxford [AA. 50]; Alton, Hants; Newbury, Berks. G. C. DRUCE,

1645. T. CYANOLEPIS Dahlst. in Arch. Bot. Stockh. n. 11, 40, 1911. Folia sat laete prasino-viridia, in utraque pagina leviter, subtus in nervo dorsali pallido sparsim vel praesertim apicem versus densius arenosa, petiolis sat angustis v. alatis, pallidis v. leviter praesertim ad basin coloratis, lanceolata, obovato-lanceolata, exteriora lobis inferioribus, triangularibus, breve acutis, superioribus ± hamatis, breve acutis-obtusiusculis, mucronatis margine superiore convexo, lobo terminali obtusiusculo-obtuso, marginibus convexis, intermedia lobis brevibus—mediocriter longis—sat latis, inferioribus v. plurimis triangularibus-deltoideis, patentibus-retroversis, in margine superiore leviter-crebre, subulato-dentatis, acutis, superioribus v. plurimis ± hamatis, obtusiusculis, mucronatis, sat acutis, plerumque integris, vulgo latis, margine superiore valde convexo et interlobiisque nullis v. brevibus v. margine superiore minus convexo et interlobiis saepe sat bene evolutis, denticulatis, ± angustis, lobo terminali brevi-mediocri, latiusculo-lato, ontoso, breve acuto, marginibus convexis, integris v. etiam triangulari-hastato—sagittato, supra lobulos laterales parvos, patentes contracto, lobulo mediano saepe angusto, brevi, obtusiusculo, mucronato, intima lobis hamatis, magis patentibus, deltoideis, margine superiore magis denticulato, lobo terminali majore et latiore, nunc breviore obtusulo nunc mediocriter longo, magis acuto ± integro v. inferne denticulato-dentato. *Scapi* folia ut plurimum longe superantes, pallidi v. basi apiceque leviter colorati, glabri v. apicem versus leviter, sub involucro densiusculi araneosi. *Involucra* obscure viridia v. vulgo atroviridia, c. 15-17 mm. longa, crassiuscula v. vulgo crassa, basi truncata. *Squamae* exteriores patentes—erectopatentes, 3.5-5 mm. latae, 15-16 mm. longae ovato-lanceolatae—lanceolatae, acuminatae, leviter sed sat conspicue marginatae, saepe denticulatae, subtus obscure virides v. atrovirides piceae, apicem versus ± violascentes, supra vulgo intense, caeruleo-violaceae v. ± obscure atro-violaceae, rarius rubro-violaceae, interiores lineari-lanceolatae, obscure virides, fere atrovirides, apicem ± piceae et apice ipso violascentes. *Calathium* c. 55-60 mm. latum, sat obscure luteum, planum. *Ligulae* marginales c. 3 mm. latae, sat planae, apice demum ± involutae, extus stria rubro-purpurea intense coloratae, dentibus ± obscure purpureis, intimae apice ± involutae. *Antherae* polliniferae. *Stylus* cum stigmat. sordide virescens, sic-

cus valde obscurus. *Achenium* fusco-olivaceum, apice acuto spinulosum, caeterum ± tuberculatum, sat laeve, basi laeve, c. 3 mm. longam, 1 mm. latum, pyramide, 0.5 mm. longo, conico, rostro 8-9 mm. longo. Dalsland, Vastergotland, Skane, Norge; Finland. Moreton Pinkney, Northants; Ivinghoe, Bucks, 1922, G. C. Druce.

1646. T. LAETIFRONS Dahlst. [2508]. Black Craig, Stromness, Orkney, June 1924, Col. H. H. Johnston.

1646. T. MUCRONATUM Lindb. f. in Act. Soc. Faun. et Fl. Fenn. xxix., n. 9, 24, 1907, et Arkiv. för Bot. 62, 1911. Finland, Sweden, etc. A plant allied to this was common by the roadside near Woodleys, Oxon in 1923 [AA. 81]. G. C. Druce.

1646. T. TRIANGULARE Lindb. f. in Med. et Soc. Faun. et Fl. Fenn. xxxv., 19, 1909, et Arkiv. för Bot. 68, 1911. Finland, Sweden, Norway. In some plenty at the back of the Crescent, Oxford, with small flowers. It is allied to this, says Dahlstedt.

There are also two Dandelions of the Erythrospermae as yet undescribed. One from Ivinghoe Beacon, Bucks is allied to *T. laetum* Dahlst., the other from St Giles, Oxford, is allied to *T. praevnum* Dahlst. Another marked form, also undescribed, grew at Inchnadamph, W. Sutherland. The identifications of the foregoing *Taraxaca* we owe to Herr H. Dahlstedt.

1677. Campanula Rapunculus L. Among the contrasting features which distinguish the somewhat similar species *C. Rapunculus* and *patula*. Syme (*Eng. Bot.* vi., pp. 15 and 16) gives for *Rapunculus*—"Calyx-tube glabrous; segments linear-setaceous, entire, erect;" and for *C. patula*—"Calyx-tube glabrous; segments linear, subulate-serrulate, sub-erect," and he adds, "the calyx-segments are not so long in *patula*, broader at the base and finely serrulate on the margins." Grenier and Godron (*Fl. Fr.* ii., 418) also stress the serrulate calyx-segment character of *patula*, "denticulées dans leur tiers inférieur." This summer the Rev. W. H. Wilding brought me a specimen which he thought was *C. patula* from Buckinghamshire (where I had many years ago gathered *C. Rapunculus*) and this specimen though fragmentary I referred to the same species. He pointed out, however, that the calyx-segments were not entire and had slight projections on the margin near the base, which indicated *patula*. However, from other characters there was no doubt that the specimen was *Rapunculus*. To prevent confusion it will be well to amend the description by adding "rarely the calyx-segments in *Rapunculus* have a few teeth springing from the hyaline margin." Such specimens are in my herbarium from Mr Bickham at Ledbury, where it occurs as a garden-weed, from Enville, Staffordshire, coll J. Fraser, 1879, and from Woodhouse, Notts, gathered in 1855 by Miss C. E. Palmer. The character seems too small to found a variety upon; therefore the description in *Hayward's Bot. Pocket Book* is altered by adding the word " usually," *i.e.*, usually entire. G. C. DRUCE.

1684. VACCINIUM ULIGINOSUM L. Studier over Polymorphien hos *V. uliginosum* L., Henning E. Petersen. *Bot. Tidsskrift* 217, 1924. Includes notice of var *pubescens* Horn. Leaves occur with rounded or pointed apices and the variations can be put in 6 groups; they may form 162 possible combinations and of those 104 have been noted. The var. *microphylla* Lange I got at Saxavord, Unst.

1687. OXYCOCCOS OXYCOCCOS (L.). A preliminary treatment of the varieties and forms of *Vaccinium Oxycoccus* found in the bogs of Germany by W. Gleisberg in *Ber. Deutsch. Bot. Ges.* 130-9, tt. iv., 1922. See also *Bot. Arkiv.* 1-34.

1689. ARBUTUS UNEDO L. A beautiful illustration of this species is given in *Gard. Chron.* 289. 1924. Trees forty feet high are found at Killarney. The tree bears fruit and flowers at the same time.

1693 (2). ERICA STRICTA Donn. Mr C. C. Lacaita shows that the correct name is *E. terminalis* Salisbury, which dates from 1796. Donn's *stricta* of the same year is a nomen nudum, and for that reason I quoted it from Willdenow, who adopted it, but as Mr Lacaita says (see *Bull. Soc. Bot. Ital.* for 1911) Salisbury's name has to be used.

1693 (2). ERICA STRICTA Andr. *Irish Naturalist*, May and September 1924. Further significance is given to the occurrence of this species in N. E. Ireland (see *Ir. Nat.*, March 1923) by the discovery by Miss Knowles of a note by the late James Britten in *Journal of Botany* 25, 1872, calling attention to the remark in DC. Prod. vii., 666, that the plant's distribution is "in montibus Corsicae, Sardiniae, et Hispaniae australis (Boiss.!), *etiam in Hibernia boreali* (Lloyd in Herb. Hooker!)" Mr Britten added that the specimen was in the Kew Herbarium, and that there was no doubt of its identity with *E. stricta;* it is labelled in Sir W. J. Hooker's hand, "North of Ireland! Dr Lloyd, 1834." Dr Praeger now hopes that the plant may prove to be actually indigenous in the north-east of Ireland as one of the species of the "Mediterranean element," on the analogy of *Glyceria festucaeformis.* This analogy however is based on the deduction that the Strangford Lough plant is *G. festucaeformis*, but Hackel and other distinguished critical botanists decline to accept that suggestion and to me it is only a variety of the polymorphic *Glyceria maritima* which I named var. *hibernica.* It is closely allied to *G. Foucaudii* (Hackel). *E. terminalis* Salisb. is a most unlikely Hibernian plant. One might as well claim *E. lusitanica* for Dorset.

1706. RHODODENDRON PONTICUM L. Mr W. B. Turrill gives (*Gard. Chron.* 378 (1), 1924) an account of this popular species, which is now so completely naturalised in the warm sandy soils of south-west Britain, where it seeds frequently. He says it occurs in the south-western Caucasus (Colchis or Pontic region) from the sea-coast to 1800 metres, hence its specific name. Noe collected it on the Bithynian Olympus, where I failed to find it in the spring. It also occurs in Azerbaijan and in the Lebanon from 1000 to 2000 m. as a form called *brachycarpum.* There is another widely separated area in the south of the province of Cadiz, in N.W. Portugal, and in Northern Portugal, Beira, etc. The evidence of Rhododendron remains in the Tertiary beds is discussed. The Höttinger breccia near Innsbruck yields plant-remains which were described by Wettstein, and in the Isle of Skyros in the Aegean Sea leaves have been discovered in tufa of a Quaternary age. Our honarary member, Professor Domin, has described a variety *Skorpilii*, differing from the type in having long persistent flower-bracts, from oakwoods at Malko Tirnovo at 400 metres, just on the Bulgarian side of the Thracian frontier.

1717. LIMONIUM TRANSWALLIANA Pugsl. See *Journ. Bot.* 129.

1924, with a figure. Coast of Pembrokeshire. Closely allied to if specifically distinct from *L. binervosum.*

1725. Primula vulgaris Huds., forma viridiflora. Inverary, Argyll, June 1924. This curious plant, which was sent by the Duke of Argyll, had been found by Mr Malcolm, one of his tenants, there. The corolla is of a very pale green colour with a yellow throat. The corolla-lobe margins are slightly crenulate as noticed by the sender, the under side of the corolla is faintly rugose and clothed with slight arachnoid pubescence. It is evidently a foliaceous corolla, but with a texture on the upper side nearly glabrous and having the normal shape of a primrose blossom. G. C. Druce.

1725. P vulgaris, var. caulescens (Koch). Miller Christy, F.L.S., in *New Phytologist* xxii., 233, 1923. Here the author gives reasons to prove that there is a caulescent variety of the primrose not due to hybridisation, and he gives instances of its occurrence in various places. That was my experience, and it was for that reason I included it in the *List*, p. 48, 1908. Mr Christy overlooks the fact that Koch published it under *acaulis*, not *vulgaris*, and for that reason I enclosed Koch in brackets.

404 (5). Buddleia (Houston) L.

1751 (10). B. spectabilis Kunth & Bouché Ind. Sem. Hort. Berol. 11, 1845. Alien, Mexico. Hortal. On waste ground, Cardiff Docks, Oct. 1924, Melvill, Smith & Druce; Harlech, Merioneth, 1922, G. C. Druce; garden-ground, as a seedling, Pyrford, Lady Davy. The genus was named in honour of Adam Buddle, a well-known British Bryologist of the late seventeenth century. The present species is the well-known and popular garden shrub with purple flowers which are so attractive to Lepidoptera. G. C. Druce.

1840. Cuscuta Trifolii, Prevalence of, in Great Britain. Rarely if ever known to have been established in Scotland. *Jour. Min. Agr. Great Brit.* 38, 1923.

1851 (5). Physalis Fendleri A. Gray. Alien, Colorado. Sand hills between Phillack Church and Dynamite Works, Cornwall, 1923. F. Harris in Thurston & Vigurs' "Note on the Cornish Flora" 329, 1924.

1887 (2). LINARIA PALLIDA Tenore Fl. Nap. i., 32, t. 159, 1811-15. Alien, South Italy. Hortal. In considerable quantity on the sea-shore at Bardsea, N. Lancs. "The shingle is absolutely lilac with it—as pretty a sight as one could wish to see anywhere. It is just like a lilac carpet to walk on." D. LUMB *in lit.* Belonging to the *Cymbalaria* group, it is a beautiful species. Det. G. C. DRUCE.

1905. VERONICA SPICATA L. in England. W. G. Clarke in *Norf. & Norwich Nat. Soc.* xi., pt. 5, 541, 1923-4, gives its history and states that Mr Arthur Bennett found it constant in culture.

1924. V. AGRESTIS L. Although usually classed as a common weed, this Speedwell cannot be so regarded in cultivations about Bristol. Latterly, however, it has been abundant in some Leigh Woods gardens, and consequently has attracted special attention in regard to the difficulty that is often found in separating it, at least in the dried state, from the closely allied *V. Buxbaumii.* When flowering there can be, of course, no hesitation in the matter, the corolla of *agrestis* being relatively small and pale with the lower lobe always white. But these corollas invariably fall directly the plant is gathered, and it is in their absence that doubt arises, due to a lack of precision by British authors in describing the other parts of the plant, in particular the relative length of peduncles to leaves, and the sepals. Babington says—"Leaves usually exceeding the peduncles . . . sepals oval." And Hooker—"Leaves about as long as the peduncles." And Syme—"Ped. as long as or shorter than the leaves." I have never seen a specimen in which some peduncles were not longer than the leaves by as much as a third. And the sepals of *agrestis* are in fact ovate, subacute, with blunt tips. Fries describes them as enerviis, but they really have three nerves or ribs, as noticed by Hooker and by Leighton. As the leaves of both species practically correspond it is of some importance, to a beginner at any rate, that such characters as can be observed in the dried plant should be accurately stated. And I note that this is well done in the *Flore de France* of Grenier et Godron. A striking confirmation of my point—the real difficulty in separating *agrestis* from *Buxbaumii* when the corollas have fallen—is furnished by the *Rep. B.E.C.*, 1915, where one expert reports on some dried specimens in favour of *V. Buxbaumii*, while another wrote "*V. agrestis.*" J. W. WHITE.

1947. BARTSIA VISCOSA L., forma RAMOSA. Mr P. D. WILLIAMS sent in July an abnormal form from near St Keverne, Cornwall, which had a branched stem. The wet season suited *B. viscosa*, and the Hon. Mrs A. LEITH sent from Bosahan in the same county very luxuriant specimens.

1949. PEDICULARIS PALUSTRIS L., forma (lusus) FASCIATA. The Rev. E. M. REYNOLDS found at Runham, Norfolk, in 1924, a plant with a prostrate flattened stem, over six inches across at base, and over six feet in length.

1974. LATHRAEA CLANDESTINA L. Mr J. L. North in the Quarterly Report of the Royal Botanic Society's Garden for October, says that he was surprised to notice the force with which the seeds were scattered by the explosion of the capsule when squeezed between finger and thumb. The seeds are shot out, as observed by him and Professor Gates, so violently that some of them were found to have travelled 27 feet. This, he says, may explain the spreading of the plant from the root of a beech tree, its original host, to other plants 40 feet away, where this year in London in May, the plants have flowered freely. That, too, was the case in Suffolk, where Lady de Sausmarez planted it at Livermere Park on the roots of a tree, and in the course of years it had spread even more than 40 feet. See *Rep. B.E.C.* 506, 1910.

1990. MENTHA LONGIFOLIA Huds., var. WEINERIANA (Opiz) Briq. Marcham, Berks, 1891, G. C. DRUCE.

1990. M. LONGIFOLIA × ROTUNDIFOLIA = × M. NILIACA (Jacq.), var. HALLERI Briq. Nort Leigh, Oxon, 1882, G. C. DRUCE.

1993. × M. PIPERITA L., var. DRUCEANA (Briq.) = *M. affinis* Strail, non Boreau. See *Fl. Berkshire* 392, 1897, and *Rep. B.E.C.* 312, 1891. By the pond near the railway at Didcot, Berks. Differs from *affinis* "ob calicum tubulosum, basi glabrum et corollam intus glabrum ab omnibus *M. aquaticam* formis longe distans et *M. piperita* pertinet." Briquet *in lit.*, 1894. Stem erect, flexuous, branched, 2-3 ft., red, very thinly hairy, with short hairs, more obvious under the nodes. Leaves of the main axis oval, acute, unequal and slightly cuneate at the base, serrate, dark green above, thinly hairy at first but soon glabrous, thinly hairy on the nerves beneath and pale green, densely punctate with glands on both faces; smaller leaves ovate, rounded at the base; serratures 5-10 on each margin, 0.25-1.25 mm. deep, of the small leaves only 0.25 mm. deep. Inflorescence shortly spicate, interrupted at the base, of the branches often capitate. Flowers ♀, corolla glabrous within; calyx glabrous, with ciliate teeth; pedicels glabrous. The principal distinguishing characters of this Mint are the oval leaves of the main axis, without basal auricles, the small number and small size of the serratures. The leaves of a form from West Gloucester are ovate to ovate-lanceolate, often auricled at the base, with 5-25 serratures, 0.25-2 mm. deep. J. FRASER.

1994. M. AQUATICA L., var. ACUTA Briq. Marston, Oxon, 1885.

Var. INCISO-SERRATA Briq. Lungmore, Berks, G. C. DRUCE.

Var. LOBELIANA Briq. S. Hinksey, Oxon, 1889; Lungmore, Berks, G. C. DRUCE; Coppice Moor, Northants, 1873, G. C. DRUCE.

Var. ORTMANNIANA (Opiz) Briq. Antony, E. Cornwall, BRIGGS; Shiplake, Oxon and Berks, 1882, G. C. DRUCE; Kinlochewe. W. Ross, 1882, G. C. DRUCE.

Var. LUPULINA Briq. Braunton Burrows, MOYLE ROGERS; Freshfield, Lancs., 1888, COSMO MELVILL.

Var. NICAEENSIS Briq. Hurst, Berks, G. C. DRUCE.

Var. WEIHEANA Briq. Gayton, Northants, 1878; Denbigh Hall, Bucks, 1873; Hinksey, Berks, 1884, G. C. DRUCE.

Var. OBSCURA Briq. Loddon-side, Berks, 1893. G. C. DRUCE.

1996. × M. VERTICILLATA (L.), var. ADULTERINA Briq. Wokingham, Berks, DRUCE.

Var. ATROVIRENS Briq. Wantage. Wokingham, DRUCE; Newton Ferrers, S. Devon, BRIGGS.

Var. CAERULEA Briq. Winkfield, Berks. DRUCE.

Var. OVALIFOLIA (Opiz) (BENESCHIANA, Fl. Berks, pp. 393). Lungmore, Kintbury, Radley, 1889. etc., Berks, DRUCE; Horton. Dorset, (284) 1891, E. S. MARSHALL; Godstow, Oxon, 1892, DRUCE; Rescobie. Forfar, 1882, DRUCE; Milton, S. Hants, 1892, MOYLE ROGERS.

Var. RUBRO-HIRTA (Zajn). Bungay. Suffolk. 1883, DRUCE.

Var. TRICHOIDES Briq. Hereford, 1882, DRUCE.

Var. LINTONI Briq. Shirley, Derby, 1887, W. R. LINTON.

1997. × M. GENTILIS (L.), var. GRATA (Host) Briq. Skelwith Bridge, Westmorland, 1890, H. E. FOX.

Var. RESINOSA (Opiz) Briq. Meavy, S. Devon, 1878, W. B. WATERFALL.

1999. × M. RUBRA (Sm.), var. RARIPILA Briq. Dorking, Surrey, 1889; Haseley, Warwick, 1881, BAKER.

Var. LAEVIFOLIA Briq. Sennen, Cornwall.

Var. CALLIMORPHA Briq. (forma rara as sub-species *Wirtgiana* F. Sch. ob calicem parvum pertinens). Cult., Shirley, Derby, 1887, W. R. LINTON.

1999. × M. RUBRA Huds., var. DRUCEI Briq., var. nov. (M. VERTICILLATA × VIRIDIS). Stem erect, flexuous, very thinly hairy below, with short hairs, more obviously hairy above, 2-3 ft., slightly branched above. Leaves oval, acute, cuneate at the base, serrate, minutely hairy along the midrib above, otherwise glabrous, thinly hairy on the nerves beneath; serratures 3-12 on each margin, acute, 0.75-1 mm. deep. Petiole $\frac{1}{4}$-$\frac{1}{2}$ in. long. Bracts of the inflorescence small, ovate, acute or acuminate. Calyx short for the species, broad, campanulate, glabrous except for the ciliate teeth, conspicuously lined with glands between the nerves. The distinguishing features of the variety are the narrow, oval, acute, very finely serrated leaves, the long petioles, the small ovate bracts, like those of *M. rubra*, var., *raripila*, rather than *M. rubra*, var. *laevifolia*, and the short, campanulate calyx, recalling *M. rubra*, var. *callimorpha*.

2000. M. ARVENSIS L., var. CUNEIFOLIA Briq. (see p. 625). Kintbury, Lungmore, Berks, 1890, DRUCE; Milton, S. Hants, 1892, MOYLE ROGERS and PURCHAS; Cubley, Derby, W. R. LINTON; Hatton, Warwick, BROMWICH.

Var. DENSIFOLIOLATA Briq. Radley, Berks, DRUCE.

2008. THYMUS SERPYLLUM L. T. ZETLANDICUS Ronniger and Druce as a sub-species. Blätter 7 nervig, breitelliptisch, erwachsen 5 mm. lang, 3 mm. breit, oberseits reichlich behaart, untere

Häefte des Randes lang gervimpert (Wimpern bis 2 mm. lang). Blütentragende Aste gonotrich, Haare oben lockerabstehend, fast so lang wie der Stengelderschmesser, Kopfchen grossblütig 15-18 mm. in Durchmesser. Blütenstiche dicht starr behaart, Haare schiefe abwarts gerichtet, Kelch dicknervig, lang: zottig, nur auf der Dorsalseite kahl. Von ssp. *Drucei* Ronn. dursch stark behaarte, lang gewimperte Blatter verscheiden Nähert sech dursch beitweose 5 nervige Blätter (besonders in Zwerg, formen von Ronas Hill) dem *T. arcticus* Dur. Hab.: Ins. Zetland from near sea-level to summit of Ronas Hill, 1650 feet. Leaves 7-nerved, broadly elliptical, when fully grown, 5 mm. long, 3 mm. broad, upper surface very hairy, the lower half of the margin bearing long (up to 2 mm.) cilia. Flowering shoots gonotrichous, upper hairs scattered and outstanding, almost as long as the diameter of the stem. Capitula large-flowered, 15-18 mm. in diameter. Peduncles closely covered with stiff hairs which are directed obliquely downwards. Calyx with thick nerves, long, villous, glabrous on the dorsal surface. It differs from the sub-sp. *Drucei* Ronn. in its strongly hairy leaves with their long cilia; it approaches *T. arcticus* Dur. by its occasional 5-nerved leaves (especially occurring in the dwarf-forms from Ronas Hill). Zetland, Fitful Head, etc., 1924, DRUCE.

2053. STACHYS SALVIAEFOLIUS Tenore. Mr Lacaita has shown (*Nuiov. Giorno. Bot. Ital.* xxxix., 19, 1923) that Miller's plant was *Sideritis sicula* Ucria, and not *Stachys*, so that Tenore's name applies to the plant in question.

2092. PLANTAGO LANCEOLATA L. Mr C. E. Thurston has sent a curious form from Polzeath Marsh, Cornwall. The flower-stalk, about 12 inches high, is capped with a leaf-rosette. The leaves are 2 inches long, and there are numerous flower spikes 3-4 inches long, the inflorescence being bracteate. G. C. DRUCE.

2113 (3). AMARANTHUS GRACILIS Desf. in Tabl. Hort. Par., ed. i., 43. Alien, adv. in Gall. et Eur. centr. Det. A. THELLUNG. Avonmouth, Som. N. or W. Glost., 1923, N. SANDWITH.

2124. CHENOPODIUM SOLITARIUM Murr in Deutsch. Bot. Monast. xix., 50, 1901. Abingdon, Berks, Oct. 1924, G. C. DRUCE. Dr Murr remarks " forma rara et eximia."

2131. C. HIRCINUM Schrad., var. FICIFOLIOIDES Murr. in sched. Waste ground, Port Meadow, Oxon, Sept. 1924, found by T. GAMBIER PARRY.

2207. × RUMEX KLOSII Danser (Funf. neue Rumex Bastarde) = *R. dentatus* × *maritimus.* This new hybrid, which Prof. Danser has never found wild, he has obtained in cultures of *R. dentatus* in his garden. It has been sent in, I think, from Blackheath, Kent, by Miss GERTRUDE BACON. Particulars will follow.

2219 (2). EUPHORBIA PALUSTRIS L. Alien, Europe. Barry Docks, Glamorgan (n. 108), Aug. 1924, R. L. SMITH. Teste A. THELLUNG. Showed me by Smith and Melvill, but the fruit being unripe the det. is not precise.

2250. URTICA DIOICA L. Sent from Bettws-y-coed, Carnarvon. by Miss TODD. It is a very acuminate-leaved plant, the margins being cut into teeth half-an-inch deep, a few of the teeth being themselves toothed. G. C. DRUCE.

2253 (3). PLATANUS DIGITATA Gordon. Professor A. Henry with Miss Margaret Flood contributes a paper (*Proceedings of the Royal Irish Academy*, vol. xxxv., 21. 1919), entitled the "History of the London Plane.' A synopsis of the six living species are given. In the *Gardeners' Chronicle* (2) 250, 1924, figures are given of *P. digitata* Gordon, supposed to be a second generation hybrid from *P. acerifolia*, itself suggested to be a hybrid of the Eastern Plane *P. orientalis* and the Western Plane *P. occidentalis.* Of *digitata* only two trees are known, one at the Cambridge Botanic Garden, the other at Bicton. The other Plane figured is *P. acerifolia*, var. *cantabrigensis* Henry.

2258 (2). ALNUS INCANA Willd., var. GLABRA Regel. Melmerby. Cumberland, Rev. W. W. MASON.

2259. CARPINUS BETULUS L. in Britain, MILLER CHRISTY in *Journ. Ecology* xii., 39, 1924. A very valuable paper on its history and a most useful account of its distribution in Britain. That it is native is proved by its nuts being found in pre-glacial lacustrine deposits at Hoxne in Suffolk, in the Lea Valley, and in the Valley of the Cam. Its charcoal has been found in several places including Hambleden in Bucks, associated with oak, elder and ash. This monograph is a model which one hopes will be followed in the treatment of other trees and shrubs.

2272. SALIX DAPHNOIDES Vill. A good figure of the catkins of this striking willow is given in *Gard. Chron.* (1) 395, 1924. Its large *Caprea*-like catkins and its young branches covered with a waxy bluish-violet coating make it an attractive species. It sometimes attains a height of 35 to 40 feet. It is much less frequent than it should be, but round Gailey Reservoir, Staffordshire, it is a pleasing feature. It is the earliest willow to produce its catkins, which are often in full flower in February. The variety *pomeranica* is planted on the dunes near Southport. Mr J. F. Rayner reports a var. *aglaia* from a hedge near Petersfield, found by Mr Browning.

2295. EMPETRUM NIGRUM L. A natural history study. O. Hagerup in *Bot. Tidsskr.*, 253-304, 1922.

2311. EPIPOGON EPIPOGIUM (L.) Dr. See *Rep. B.E.C.*, 330, 1924; *Gard. Chron.*, Aug. 1924. To the account already published I am able to add that the specimen at the Cambridge Herbarium is not from Ludlow, but is the original specimen which was sent by the finder from Tedstone Delamere to the Rev. W. R. Crutch, from whom it passed to Professor Babington. Thus we know for certain of only three British specimens—(1) this from Herefordshire at Cambridge, dated Aug. 1854; (2) gathered by me in the Ludlow locality in 1892, which I have now given to the British Museum, and (3) the Oxfordshire specimen gathered last July, which is in my own herbarium. Our member, Mr F. M. Day, tells me he has seen a dried specimen which was gathered in 1910 by Mr Mountfort in Herefordshire, and this, if in existence, will make the fourth. It occurred as a solitary example near Ross on Wye. There is a note on the Babington sheet at Cambridge, where there is a painting of the Salopian plant dated Aug. 1881, to the effect that it was seen by a retired chemist named Cockney, but he thought it was a deformed Bee Orchid. The wood where it grew was called the Upper Evens. The plant was found quite close to the present high road. Miss Peile, who also found it there, tried to get it to grow in her garden but failed. G. C. DRUCE.

2325. ORCHIS LATIFOLIA L. Seeds of this were described by Mr T. A. Dymes at the Linn. Soc. Meeting (no. 435), June 19, from Chippenham Fen, Camb., and Winchester. He says the kernel is shorter and broader than in *praetermissa*, and it is, he says, " obviously a pure species." When I was last at Chippenham I saw much *praetermissa* and two plants which were almost certainly hybrids of *praetermissa* and *Fuchsii*, but, of course, these may have been in a different part of the fen. It would be well if the flowers from the plant which afforded the seeds were also preserved.

2325. O. LATIFOLIA L. Mr W. H. St Quentin sent me a photograph of a plant which Dr Keller sent me in 1923 from Aarau in Switzerland. The leaves are rather narrow and spotted. The flower-shape is not easy to see in the photograph but it is evidently not *praetermissa* and appears to have a facies of its own. The specimens sent from Aarau had gone over, but they were different from those of any plant seen in Britain.

2327. O. O'KELLYI Druce. Mr A. W. Stelfox, after his recent visit to the Burren where he saw abundance of this plant, says:—" I have come to the conclusion that it and the ordinary white Orchid (*O. Fuchsii*) which we get about here are quite distinct. Mr R. A. Phillips has always maintained so. Many plants of the *O'Kellyi* had a purple blush and were not pure white, had an almond essence scent, and buff-yellow (not pink) anthers. Moreover, I saw growing beside it a white orchid which to me was an albino *Fuchsii* and the two were very different, though the *Fuchsii* was nearly over and the *O'Kellyi* just out." See *Ir. Nat.*, December 1924.

2342. HABENARIA VIRESCENS Druce. An abnormal form — a "Reversion," as J. F. in *Gard. Chron.* (2) 57, 1924, calls it—is well figured there. The plant was exhibited to the Scientific Committee of the Royal Hort. Soc. in June by J. F. Bunyard. Mr Fraser contributes a full description.

2377. GALANTHUS NIVALIS L. There is an article by Formakin (*Gard. Chron.* (1) 160, 1924) which treats of this popular vernal flower, of which the writer planted 20,000 bulbs 20 years ago, but his experience was that he had never observed seedlings from them.

He says it is quite naturalised at Ardgowan and Finlayson in Renfrewshire. In the former place it owes its origin to Lady Stewart, who had the bulbs planted between 1800 and 1812.

2428. JUNCUS CONGLOMERATUS L. Doddington Wood, Lincoln, Rev. W. W. MASON. A curious condition over three feet high, with very weak but thick stems, and a copiously branched compound inflorescence, some of the heads being sessile, others themselves compound, borne on pedicels 1-3 inches long. Mr Fraser tells me he has seen a similar plant from Virginia Water. It is a form educed by shade and moisture.

2437. J. BULBOSUS L., var. KOCHII (Schultz). In *Svensk Bot. Tidskr.* 143-153, 1923, F. Hard av Segerstad claims that this 6-stamened plant is a good species, as it has specific geographical distribution, being an Atlantic species.

2468. AMORPHOPHALLUS TITANUM Beccari. See *Gard. Chron.* ii., 302, with some good photographs. This gigantic and most evil-smelling aroid flowered at the Buitenzorg Garden in June this year. The tuber had been sent from Sumatra. It also flowered at Kew in 1901; the total height of the flower was 2¼ metres, the diameter of the sheath 1.2 metre. The Java plant was longer, reaching 2.61 metres in height, the circumference being 1.23 metre. The stench was overpowering: a mixture of rotten shrimps and dead flesh would be nothing compared with it.

2542. SCIRPUS SETACEUS L., var. PEDICELLATUS Dr. (see *Rep. B.E.C.* 68, 1924). Mr N. Sandwith draws my attention to a note in the *Phytologist* iii., 865-7, dated Feb. 6, 1850, in which Mr R. Withers of Bath contrasts *S. Savii*, var. *monostachys*, and *setaceus*. The figure he gives of *setaceus* shows flowering spikes on conspicuous peduncles quite 3 mm. long, the plant being about 8 cm. high. It was collected at Hampton Bogs near Bath, N. Somerset, by Mr T. Dutton. Mr Withers remarks that "the locality appears to me to afford plants with the spikes more pedunculated than any I have before examined."

2556. CLADIUM MARISCUS Br., which has so wide a range in South, West and Middle Europe, is one of the rarest plants in Norway, and although mentioned by Bishop Gunnerus in 1772, and by others, great doubts were expressed upon the identification. It was, however, found near Kristiansand in 1871 by R. E. Fridtz, and in 1922 our member, Prof. J. Holmboe, discovered it in a small tarn near Lervik among sphagnum, with *Lysimachia thyrsiflora* and *Menyanthes*, the underlying rock being a micaceous shale. Dr Holmboe concludes that, like *Hedera*, *Cladium* came into Norway from Southern Sweden, where it already existed in late glacial times, and it then attained in the south and south-west coast districts a wider distribution than at present and has since shrunk to the couple of relict occurrences noted above. *Cladium*, as we know, thins out northwards in Britain, and I have thought that its solitary locality in Western Ross is rather an arrival than a relict, and that its occurrence there may be due to water-fowl.

2611. CAREX REMOTA × DIVULSA. Mayfield, Surrey, C. E. SALMON. Specimen exhibited Linn. Soc. (No. 435) June 19, 1924.

2631 (11). PASPALUM DILATATUM Poir. Encyc. v., 35. Alien, Brasilia. Cardiff, Misses VACHELL and DAVID, R. L. SMITH and MELVILL. Det. R. BUTCHER and A. THELLUNG.

2641 (4). SETARIA GENICULATA (Lam.) Pal. Beauv. (S. GRACILIS H.B.K.). Waste ground, Bradford, 1923, J. CRYER. Det. A. THELLUNG.

2643. SPARTINA TOWNSENDII Groves. In *Gard. Chron.* 162, 1924, Professor Oliver has an article in which he discourses on the notes made by M. Senay and Corbière et Chevallier (*Comptes Rendu*, vol. 174, 1084, 1922) of its occurrence in France. He agrees that the French and British plants are identical, and says that the view is gaining support that *S. Townsendii* is really identical with the plant named by E. D. Merrill as the var. *pilosa* of *S. glabra* Muhl., as we showed in *Rep. B.E.C.* 72, 1923. One may add the authority for the varietal name *S. glabra* Muhl., var. *Townsendii*, is Corbière et Chevallier, *l.c.*, if it be necessary to reduce it to that rank, and assuming that it is not of hybrid origin. It seems, however, deserving of specific rank as *S. Townsendii* Groves. Should it be proved not to be a hybrid, what an amount of verbiage has been written about its vigorous growth and rapid spreading as being the effect of the supposed vegetative powers possessed by first hybrids. It may be well to put on record that *Townsendii* has been planted at Sheerness, in the Colne at Alresford, in the Stour estuary, in the Wells (Norfolk) marshes, on the west coast at Clevedon, Somerset, and in Mid Wales on the Dovey estuary in Merioneth and Cardigan. Why will not our numerous geneticists attack the problem and see if they cannot produce *Townsendii* from pollinating *stricta* with *alterniflora*? Again, Merrill's variety should be brought from the States and cultivated here in order to see whether it is exactly *Townsendii*.

2662 (12). SPOROBOLUS ARGUTUS Kunth. Alien, Brasil. Cardiff, showed by MELVILL and SMITH, 1924. Named by Kew.

648 (4). PIPTATHERUM Beauv. Agrost. 17, 1812; Oryzopsis Michx Fl. Bor. Amer. 59, 1803.

2669 (20). P. MULTIFLORUM Beauv. Alien, Europe. In plenty at Barry Docks, Glamorgan, DRUCE, MELVILL and SMITH. Det. A. THELLUNG.

2673. PHLEUM PRATENSE L., var. INTERMEDIUM (Jord.). Merton, Surrey, sent by Mr C. E. Britton as a bracteate form of *intermedium* (R. n. 2709). The long inflorescence (5 inches) has a leafy bract at the base.

2737. CYNOSURUS CRISTATUS L. Newquay, Cornwall, C. E. THURSTON, 1924. Remarkable for its interrupted inflorescence—f. INTERRUPTUS Druce.

2683. AGROSTIS VERTICILLATA Vill. × PALUSTRIS Huds. (vel ALBA L.) nov. hybr. = × *F*. ROBINSONII Druce. St Sampson's, Guernsey, with both parents, F. ROBINSON, July 1924. On the *palustris* side, but with the panicle-branches having spikelets to the base. Appears sterile. G. C. DRUCE. Marquand and Fraser agree to its being a hybrid.

700 (2). ASPERELLA Humb. in Roem. & Ust. Mag. iii., vii., 5, 1790.

2858 (2). A. HYSTRIX Humb. Alien. Waste ground, Oxford, Sept. 1924, G. C. DRUCE. Det. (as *Elymus Hystrix*) by Kew.

708 (2). PTERIS L.

2876 (2). P. LONGIFOLIA L. Alien, S. Eur. On the Conservatory wall, Botanic Garden, Oxford, self-sown and there for some years. Sept. 1924, G. C. DRUCE.

2907. POLYPODIUM VULGARE L. in Essex: Why is it decreasing? Miller Christy, *Essex Naturalist* xx., 287-292, 1924. The author thinks there must be some special cause of a general nature to account for its very marked decrease throughout Essex. I may say that it is still pretty common in North Essex in the old hedges about Twinstead, Alphamstone, and Wickham, but the cutting of hedgerows and tidying up are destroying factors, and the fumes from tar-spraying the roads may also be nocent.

2934. NITELLA OPACA Ag., var. BRACHYCLEMA Groves and B. Webster in *Journ. Bot.* 33, 1924, and in *Brit. Charophyt.* Westmorland, Easedale, H. G. FOX, etc.; Caithness, Yarehouse Loch, GRANT; Asta Loch, Shetland, DRUCE; Donegal, Kindrum Lough, etc., B. WEBSTER.

2952 (2). CHARA MUSCOSA Groves and B. Webster, *l.c.* 34, t. 570, and in *Brit. Charophyt.* First collected by Canon Bullock-Webster in Lough Mullaghderg, W. Donegal, 1917.

2953. C. BALTICA Fr., var. RIGIDA Groves and B. Webster, *l.c.* 34, 1924, and in *Brit. Charophyt.* Hickling Broad, E. Norfolk. Canon BULLOCK-WEBSTER, 1898.

NOTES ON PUBLICATIONS, NEW BOOKS, ETC., 1924.

(*Owing to exigencies of space and the erratic receipt of foreign works this is necessarily incomplete.*)

ABRAMS, LE ROY. AN ILLUSTRATED FLORA OF THE PACIFIC STATES. WASHINGTON, OREGON, AND CALIFORNIA. Vol. 1, tt. xi., 557; tt. 1299. Stanford University Press, 1923, Almquist, E. Investigations of Bacterial Hybrids, in Journ. Infect. Diseases, vol. 35, 341-6, 1924. *B. typhosus* × *B. dysenteriae* has been discovered, thus indicating sexuality in Bacteria.

Armitage, Eleonora. Hepatics of Herefordshire, in Journ. Bot. 67-79, 1924, gives details of the 90 species and 21 varieties and forms which have been found in the county.

Avebury. The Life-work of Lord Avebury (Sir John Lubbock). Edited by his daughter, the Hon. Mrs Adrian Grant Duff, and comprising essays by Sir Bernard Mallet, K.C.B.; Sir Arthur Keith, F.R.S.; Dr A. Smith Woodward, LL.D., F.R.S.; Professor J. A. Thomson, LL.D.; H. St J. K. Donisthorpe, F.Z.S., F.L.S.; Dr A. C. Seward, F.R.S. and Sir Michael E. Sadler, K.C.S.I. pp. vii., 261. Watts & Co., London; 6/-. A most interesting little volume which all admirers of Lord Avebury will welcome. The chapters, which comprise essays by those who knew him, deal with his interests in Botany, Zoology, Anthropology, Entomology and Geology, as well as with his early and later years, his political and economic interests, and his ideas of education. It is an interesting account of the life of a man who, from a sensitive child, trained by a sensible system of education by his mother, became one of the greatest promoters of the study of science as well as a seeker of the welfare of others. His intense interest in nature was inspired by his great friend, Charles Darwin, with whom he had been associated from childhood. He was not satisfied with a mere theory of his subject but would always carry it out by practical experiment whenever possible. Thus he was able to give to science valuable knowledge from actual observation. Amongst the numerous interests in life he established many Acts of Parliament; laid the foundation of modern Anthropology; promoted the research of Geology; and was a pioneer of the scientific and fascinating study of animal behaviour and study of insects—notably ants, wasps and bees. On Botany he wrote several books and articles on flowers considered in relation to insects; on fruits and seeds and leaves; on stems, buds, stipules and seedlings, all resulting from his tireless and careful personal study and by utilising every spare minute of his exceedingly full and varied life. His great aim was to make his works clear enough to interest the layman in natural research so that they might be able to carry on experiments themselves and help to find out a reason for all things in nature, not just to be satisfied with a surface knowledge, but to find out the " whys and wherefores." Each chapter of this compact little book clases with a bibliography of Lord Avebury's works and the whole volume is illustrated by extracts from his writings.

RUTH BRIGHT.

BAILEY, L. H. MANUAL OF CULTIVATED PLANTS. pp. 851. The Macmillan Company, New York and London, 1924; 31/6. In this concise, excellently printed octavo, descriptions are given of plants which are cultivated in the continental United States and Canada. These are grouped under 170 natural families, 1246 genera, and 3665 species. The numerous horticultural varieties, forms, and hybrids are excluded. It may be said that the same author's *Standard Cyclopedia of Horticulture* has 26,602 species, although even that does not include all the plants cultivated in North America. That book gives also 6715 Latin-named varieties. In looking through this most practical work one feels struck that for some reason or another the American botanical writer seems to have a clearer idea of what is needed, and how best to supply that need, than his British confrere. I have just had to use Hemsley's Chinese Flora—to give it a short title—and despite the author's erudition, how repulsive the long string of names and synonyms becomes. There is no adequate introduction—it is as dry as dust, but I am not saying the dust is not gold. Here on the contrary we have in four pages the "purpose of the work" clearly set out: mainly it is to describe, as its title implies, the species most commonly cultivated, but there are three classes of rather marked exceptions—(1) Many plants not offered by dealers nor appearing in printed lists are in cultivation in old premises and private gardens, and likely to be exchanged from hand to hand; these plants have established themselves in the affections of growers and they should be recorded, even though not common or in the process of passing out in a commercial epoch. (2) Species of rather recent introduction that promise to be acquisitions, but which are not yet well known; it is impossible to forecast which ones are likely to become fairly common or established. (3) Certain species of great historic interest in Europe and other countries that should be known as a matter of general knowledge but which may be little cultivated in North America: an example is *Lupinus albus*, and cogent reasons are given for the inclusion of this and other cases. The author has followed the International Rules and adopted the Engler System of sequence, but we are glad to see that the multiplication of genera is not copied, *e.g.*, *Lychnis* serves for four of the Engler genera. The author prefers to spell the names as they were originally written, therefore he writes *Wisteria* not *Wistaria*, although Nuttall gave it that name in commemoration of Caspar Wistar (a family name sometimes spelled Wister); and he says Nuttall had the right to spell it as he pleased; so too, as in our *List*, he spells *Mathiola* as it was written in Aiton, and *Malcomia* not *Malcolmia*. Robert Brown, he says, was a critical student, and his spelling of these generic names must be accepted as intentional. The fact, however, is that in Aiton's *Hort. Kewensis* Brown does not appear as the author. This, however, has no bearing on Mr Bailey's argument, which seems sound, or else one treads on a treacherous morass, and such names as *Goodenough* or *Bartsch* will have to be brought into use instead of the Linnean *Bartsia* or Gay's *Goodenovii*, which was doubtless used by the author for the sake of euphony. However, one notices that *Ludwigia* not *Ludvigia* is chosen. Fancy the poor gardener who has mastered the difficult word *Strausvœsia* to have to grapple with *Straugwazsii*. Three pages are devoted to "The Herbarium," and the proper way in which one should be formed. As he well says, a herbarium is an index to the vegetable community, the plants themselves being on the cards. Nineteen pages are occupied with "Terms and Names," which include an excellent glossary. Four pages are devoted to "Authorities for the Binomials and Abbreviations and Explanations." Then comes an excellent "Key to the Families" followed by the "Systematic Treatment of Cultivated Plants." Here we are glad to see *Phyllitis* and *Dryopteris* used in their proper sense. We may add that under each family there is a key to the genera, and under each genus a key to the species.

BAILEY, L. H. THE NATURE AND PROPERTIES OF SOILS. Macmillan & Co.; 15/-.

BAILEY, L. H. THE CULTIVATED EVERGREENS: a Handbook of the Coniferous and most important Broad-leaved Evergreens planted for ornament in the United States and Canada. 4to.; pp. xvi. 434, tt. 48. Macmillan & Co., London, 1923; 31/6.

BAKER, R. T., & H. G. SMITH. WOOD-FIBRES OF SOME AUSTRALIAN TIMBERS: investigated in reference to their prospective value for paper-pulp production. pp. 159. A. J. Kent, Sydney, 1924.

BEAN, W. J. SHRUBS FOR AMATEURS. pp. vii. 117. Country Life, 1924; 5/-.

BECCARI, ODOARDO. ASIATIC PALMS—LEPIDOCARYEAE: The Species of Calamus. pp. vi. 142; tt. 83. Ann. Roy. Bot. Gard., Calcutta. Vol. xi., 1913-4; 42/-. 256 species of the genera are known to exist, and it contains the longest flowering plant known.

BENNETT, F. T. OUTLINES OF FUNGI AND PLANT DISEASES: for Students of Agriculture and Horticulture. 8vo., pp. xi. 254. Macmillan & Co., London, 1924; 7/6.

BENTHAM, GEORGE. HANDBOOK OF THE BRITISH FLORA. Assisted by Sir J. D. Hooker. The seventh edition, revised by A. B. Rendle, M.A., D.Sc., F.R.S. pp. lxi., 606, and ILLUSTRATIONS OF THE BRITISH FLORA, drawn by W. H. Fitch. The fifth edition, pp. xxvii., 338, tt. 1315. Lovell, Reeve & Co., London, 1924; 12/- each. The publication of this popular work will be of great interest to many botanists to whom the name Bentham is a household word. To a large section of our members it is a Koran and the soubriquet "Benthamites" is a cordon of merit of which most are proud. Even if, sometimes, I may have faintly suggested that they are perhaps a trifle too eclectic yet one always feels that there is such a great comfort in dogma which can never be experienced by the most inveterate "hierarchiarch" or the most confirmed batologist. The popularity of the *Handbook* is not undeserved. It came into being when Babington's *Manual* was the only serious competitor. It offered a scientific treatment, clear descriptions, simplicity of style, and a clavis. There was a good, useful summary of the characters and uses of the families, and the illustrations, though small, were well done. Therefore it appealed to a wide circle and it enabled its readers to run down the plants more easily and more correctly than most workers were able to do with the *Manual*. Between it and the intense worker there is a great gulf but the *Handbook* often led its reader to the cliff-side and sometimes induced him to venture over to the splitters. The two big volumes, issued at 60/-, formed my first working books and I had to renounce smoking to get them, so one always has a kindly feeling towards it and watches its development with a friendly eye. To pour new wine into an old bottle is not a thankful task as one has had to realise when one edited " Hayward " or reviewed the *Manual*, but the compiler or reviser may always comfort himself with the thought that it might have been done worse. The reviser of the present work has had much courage to enter upon such a task when occupying the great and responsible position which he holds. He brought a great asset in his scientific knowledge and in his innate conservatism—I am using the term in a commendatory sense—since too bold an innovator might have wrecked the work. We are, therefore, very grateful to him for retaining its plan and its general nomenclature, so that we read *Lychnis dioica* L. (not emend. anybody), that *Rhinanthus* is retained, as are *Rosa Eglanteria* for our Sweet Brier, *R. villosa*, *Epilobium tetragonum*, the time-saving *Cotyledon Umbilicus* and *Kentranthus*. Doubtless the reviser's hands were tied in regard to the main text but one does not like to see such statements as "recently found" when it applies to forty years ago as in the cases of *Schoenus ferrugineus* and *Juncus tenuis*. The revision of erroneous statements regarding the habitats or localities has been practically negligible, hence we have such a travesty of facts under *Crepis taraxacifolia* which is said to "chiefly occur in limestone districts of southern England, but extending into Yorkshire, rather more frequent than *foetida*." Few people have gathered *foetida* in more than two British localities. We may say that *taraxacifolia* is present in the proportion of a million to one of *foetida*, that there is scarcely an agrestal parish south of Yorkshire in which it is not found, and it has reached Ireland. So, too, with the belated remarks about *Matricaria suaveolens* which is said to be " established in several places." The fact is that it occurs in every country of Britain, even to the most northern island of the Zetland group. Of *Senecio squalidus* it is said that " it is quite established on walls at Oxford, Bideford, Cork, and a few other localities in middle and southern England and Ireland." Readers need no reminding of the masses of it on railway-ballast (not on walls only) at Oxford, Didcot, Reading, Southall, Swindon, Droitwich, of the thousands of specimens on the Staffordshire mine-tilts, and of its occurrence at Chester, Aberystwith, Portland, Rugby, etc. Other glaring examples of distribution not brought up-to-date are *Cirsium setosum*, *Crepis biennis*, *Holosteum*, *Muscari racemosum*, *Scirpus parvulus*, *Naias flexilis*, and *Viola rupestris*. *Scheuchzeria* is no longer found in the habitats given, but it does occur in another county. *Pinguicula alpina* has not recently been found, and is there any proof that it was ever found in Skye or Sutherland. *Cirsium tuberosum* is not limited to Wiltshire—it occurs in two other counties. Nor is the distribution so limited of *Carex tomentosa*, *Carum verticillatum* (one did not expect Surrey habitats to be omitted), *Salvia pratensis*, *Arabis scabra* (written *stricta*) or *Potamogeton rutilus* which extends to the Orkneys and Zetland. *Elisma natans* is an increasing species which is spreading along our canals and is abundant in several places. *Linaria purpurea* is somewhat more than " nearly naturalised." How long is it since *Sisymbrium polyceratium* was seen in the streets of Bury St. Edmunds? *Gnaphalium norvegicum* is found in Ross-shire, but one doubts if it ever has been gathered in Forfar. *Oxytropis campestris* is not confined to Clova. *Carex rupestris* is not a plant confined to high mountains, and is *C. ericetorum* always on "chalk-hills?" *Selinum* is not confined to " damp-fen woods," and *Sonchus palustris* is not confined to the Eastern counties. *Juncus capitatus* is found in Anglesey. I have never seen *Scirpus Holoschoenus* in the Channel Isles, nor have I ever heard of any one who has, and the same may be said of *Anaphalis margaritacea*. Probably the Cape *Gnaphalium undulatum*, which is abundantly and completely naturalised, has been mistaken for it. *Asarum*, too, has a much wider range than that given. *Ophioglossum lusitanicum* is not found in Ireland. The Somerset locality for *Leucojum vernum* is omitted, and *Lobelia urens*, *Juncus tenuis*, *Orchis hircina* and *Salvia pratensis* have additional localities, the *Juncus* now being widely spread. It is ludicrous to read " that *Calamagrostis stricta* was formerly found in Scotland, etc." It is still there and also in Norfolk. This criticism applies to a very large number of species. Surely it is high time to correct the statement that *Sisymbrium pannonicum* is " half naturalised." Compare its occurrence with *S. Irio*. There seems a curious inconsistency in the selection of plants added. (The additions are enclosed in square brackets.) We see that *Carex microglochin* is figured but not *chordorrhiza*, that *Sisyrinchium californicum* is included but not *Polygonum sagittatum*, that *Populus canescens* is figured but the much commoner *P. deltoidea* is not even noticed. *Hydrilla*, *Azolla* and *Prunella laciniata* are figured but not *Ajuga genevensis* nor are *Impatiens parviflora*, *glandulifera*, etc., mentioned. *Nymphaea occidentalis* is given specific rank, but *Rhinanthus groenlandicus* is not mentioned. *Cerastium pumilum* is poorly described and like several other species is grouped under *vulgatum*. *Cucubalus baccifer* has its new stations unnoticed and there is no proof that it was "introduced into the Isle of Dogs in ballast." *Dianthus gallicus*, *Orobanche Ritro* and *reticulatus*, *Agrostis verticillata*, *Sagina scotica*, *Cotoneaster microphylla* and *C. Simonsii* and many others are omitted. It may be urged that some of these are recent arrivals or only casuals—but if we glance through the additions what can be said for *Sisyrinchium californicum* and *Narcissus obvallaris*? Have not the foregoing as great a claim for admission as *Erysimium orientale*, *Arabis Turrita*, *Caucalis latifolia*, *C. daucoides*, *Linum usitatissimum*, *Coriandrum*, *Roemeria*, *Atriplex hortensis*, *Xanthium Strumarium*, *Asplenium fontanum*, *Orobanche ramosa* and *Sempervivum* which are figured. One of the least worthy additions is *Veronica arvensis*, var. *eximia* since if such a trivial plant is inserted it gravely upsets the standard of the plants described. One may say that the additions include *Geranium purpureum*, *Juncus alpinus*, *Luzula pallescens*, *Narcissus obvallaris* (alien), *Allium carinatum*, of which a figure would be welcome, *Iris spuria*, *Sparganium alterniflorum* and *Potamogeton Drucei*. There has been little change in the nomenclature. It would have been an advantage to have replaced *Euphorbia segetalis* by *portlandica*, to have given the valid names *Brassica arvensis* and *incana* instead of *B. Sinapis* and *B. adpressa*. What advantage is there in using *Linum bienne* for *angustifolium* while *L. perenne* is retained, or *Erica carnea* for *mediterranea*, or what advantage in *Hieracium villosum* (which has never been found in Britain), *Gladiolus communis*, *Bupleurum opacum*, *Trigonella purpurascens*, *Anagallis caerulea*, *Leontodon hirtus*, *Orobanche major* (in the sense of

Rapum), *Carex Hostiana*, *C. flacca*, *C. ovalis*, *C. rostrata*, *C. lagopina*, *Poa rupestris* (in the sense of *procumbens*), *Paeonia officinalis*, *Lepturus incurvatus*, *Gastridium lendigerum*, *Oxytropis uralensis*, *Polygala depressa*, *P. Amarella*, *Romulea parviflora*, *Lythrum hyssopifolium*, *Lloydia serotina* and *Juncus obtusiflorus*. Since attention is called on special groups such as Hieracia, Rubi and Salicornias to special works the same compliment might have been paid to Mrs Gregory's "Violets" and to the papers in our own Reports on *Thymus*, the Water Buttercups, *Sagina*, *Melampyrum*, *Taraxacum*, etc. The book is admirably printed and the plates are reproduced on paper which we are told will bear water-colours well. There are few misprints. *Dianthus caesius* is of Sm. not L. *Arenaria sedoides* is anonymous, and the Zetland botanist was Edmondston not Edmonstone. We have no doubt that this revised edition will have a large circulation and will in time bring many neophytes to our ranks. My old friend, Sir Mountstuart Grant Duff, used to give a copy of the *Handbook* to many of his young friends to put them into the right path and in his charming "Diaries" there will be found many pleasing references to it for he was also a Benthamite. Had he seen the energy with which some of his disciples last year were at Llanberris most industriously painting in their finds after a heavy climb up the Glydyr he would have greatly rejoiced.

Black, J. M. Flora of South Australia. Part I: Cyatheaceae—Orchidaceae. pp. 154, tt. 9, fig. 34. R. G. E. Rogers, Adelaide. Several new varieties and combinations occur.

Blakely, W. F. Prolific Weeds, in Agric. Gaz., New South Wales, 346. 1924. The following aliens are now becoming more or less aggressive weeds:—*Tribulus terrestris* (Caltrops), *Heliotropium europaeum* (Wild Heliotrope), *Navarretia squarrosa* (Californian Stink-weed), *Solanum rostratum* (Buffalo Burr), *Centaurea solstitialis* (St Barnaby's Thistle), *Inula graveolens* (Stink-weed), and *Tagetes minuta* (Stinking Noger).

Blatter, Rev. E. Flora Arabica, in Rec. Bot. Soc. of India. Vol. viii.: Labiatae-Ceratophyllum.

Bose, Sir Jagadis Chunder. The Physiology of Photosynthesis. Demy 8vo., pp. xx., 287. Longmans, Green & Co., London, 1924; 16/-.

Botanical Abstracts. Published under the direction of the Board of Control of Botanical Abstracts, Inc. Vol. 13, Jan.-Nov. 1924; 12 dollars.

Botanical Society of Edinburgh. Public lectures were given under its auspices at the Lecture Hall, Botanic Gardens. These include "Primulas" by Prof. W. Wright Smith; "Plant and Bird Life on the Barra Isles," by R. M. Adam; "How Plants Grow," R. I. D. Graham, M.A., D.Sc.; "Remarks on the Flora of Salisbury Crags," G. B. Wallace, B.Sc.

Bowles, E. A. A Handbook of Crocus and Colchicum for Gardeners. 8vo; pp. xii., 185; tt. 24. Martin, Hopkinson & Co., London, 1924; 12/6. This eminently practical and useful work, by one whose long experience in growing these beautiful plants, can be most highly recommended. What Mr Bowles does not know about their propagation and development may be said not to be worth knowing. Anyone who has seen the beautiful variation in colour of *Chrysanthus* in his garden at Myddleton Hall will bear witness to this. I saw it last January, and the brilliant orange-red of *garganicus* recalled the slopes of the Bithynian Olympus, where I last saw it growing. His notes, too, on the *Colchicum* are of high value.

Britton, N. L., and J. N. Rose. The Cactaceae. Vol. iv. and last. Carnegie Institution of Washington, 1919-23. The giant Cereus of Arizona is named *Carnegiea gigantea;* it reaches a height of 30 feet, and a plant will weigh from 6 to 8 tons. The four volumes have 137 plates, mostly in colour, and there are about 1100 text figures.

Britton, N. L., and Percy Wilson. Botany of Porto Rico and the Virgin Islands. New York Acad. Sc., 1924; 2 dollars.

Browne, Lady Isabel. Note sur les Bractées de Palaeostachya gracilis, in Bull. Mus. Nat. d'Hist. Paris, xxix., 1923.

British Bryological Society. Report for 1924. Secretary, Mr D. A. Jones, 1 Victoria Road, Brynteg, near Wrexham; subscription for 1925, 7/6. There were 4665 specimens distributed among the members in 1923-4. It contains new forms of Sphagnum from the pen of our late most valued member, Mr J. A. Wheldon.

Buller, A. H. Reg. Researches on Fungi. Vol. 3: The Production and Liberation of Spores in Hymenomycetes and Uredineae. pp. xii., 611. Longmans, Green & Co., 1924; 30/-.

Bulletin Soc. Linneenne de la Seine Maritime. 12 francs annual sub. Issues Exsicc. 1923 of 78 species, including several critical species. *Spartina glabra* Muhl., var. *Townsendii* Corb. et Chev. from "Est de Havre," P. Senay.

Carter, Humphrey Gilbert. Descriptive Labels for Botanic Gardens. pp. 80. University Press, Cambridge, 1924: 1/6. The object of these labels is to convey along with the name of the species some useful or interesting knowledge respecting them. The ordinary label used in Botanic Gardens of cast iron material necessarily has no room for such details, and is not a sightly object. In the Cambridge Garden such descriptive labels as these are first coated with some water-proof material, such as celluloid, either in amyl acetate or acetic acid, in order to obtain a reasonable durability. A glance through this series shows how well Mr Gilbert Carter has succeeded in giving in terse language some striking points relative to the species. Under *Cercidiphyllum japonicum* ten lines give an excellent account of the species: however, at Westonbirt the tree which in Japan is 100 feet high is little more than a shrub but the autumn colouring is a thing to behold. One may suggest that a somewhat larger type for the species name might well be employed. One hopes that this method may catch on so that he who runs may read.

Chemist and Druggist. Descriptive Articles; Nature Pictures of Medicinal Plants. Jan.-May 1924. Eight excellent coloured plates include Belladonna, Stramonium, Hyoscyamus, Valeriana, and Digitalis.

Christy, Miller, F.L.S. See under *Carpinus Betulus* and *Polypodium vulgare* L, Copeland, Edward Bingham. Rice. pp. xiv., 352; tt. 27. Macmillan & Co., London, 1924; 20/-. The monograph of the Wheat Plant written by our member, Prof. Percival, dealt in a masterly manner with the history and cultivation of the cereal, with which we in Britain are especially familiar, and for which he claimed that a greater amount is grown than any other corn. He gave its ancient lineage and mentions that about 2000 varieties are grown by him at Reading. Next to it, if indeed it has to yield a second place, undoubtedly is Rice, which likewise has a most ancient history, the origin of which it is well nigh impossible to determine. Probably, as Professor Copeland suggests, it had its beginnings in S.E. Asia, but he is too wise to attempt to more precisely indicate its origin. He claims that its produce even excels that of wheat in its annual crop. The International Institute of Agriculture estimates its normal annual production at 440 billions of pounds weight of rough rice, which, when prepared ready for food, affords no less than 300 billions of pounds. It is, he says, the staple food of the greatest number of people. While wheat is admitted to come from several species, it appears that Rice is derived from *Oryza sativa* only, but it has thousands of varieties, mostly cultivated forms which are distinguishable. In equatorial Africa *O. longistaminata* has received specific rank. It is a perennial, but its introduction even into tropical Queensland has not been a success. The wild rice of the northern United States is quite a different genus. The author gives an excellent chapter on its botany. We know how fields may be benefitted by the growth of the bacillus-noduled Leguminosae, so on the other hand there are plants which prove poisonous to other species. Rice, says the author, thus suffers when it is preceded by Cogon grass. The influence upon the Rice crop of Climate, Soil, and Water are treated in an admirable manner, as are Diseases and Pests. Among the latter are a group of nematode worms, some living in the roots, others in the stem, while there are moths such as *Chilo* species and *Sesamia*, of which coloured figures are given, the caterpillars of which attack the leaves. Still worse are the Borers, which get into the stem. Nor after the Rice is garnered are the troubles over. Malevolent weevils, *Calandra Oryzae* L., and other beetles take a large toll. The remedy is "poison gas" in the shape of the malodorous bisulphide of carbon. There are birds and animals also to be dealt with. To the ordinary British botanist Rice is Rice. Allusion has already been made to the varieties: their number is legion. Java, Indo-China, and Japan have, it is said, about a thousand varieties each. In the Philippines, where Prof. Copeland did so much of his excellent work, 3500 varietal names are known, and he presumes as the result of government experiments that 2000 are really different. In India about 8000 have been recorded. Ceylon has only 200, while for the enormous Chinese country no estimate is made; probably we might safely adopt the Indian number, so that over 20,000 varieties may exist. Carolina Rice, which commands a higher price than the Indian, has two good varieties, White and Golden. The information given on the Seed and Varieties makes this work indispensable to the rice grower. As regards California, where rice-culture is of quite recent origin, the author tells us that in 1903 he planted several varieties, only one of which came to maturity. That excellent Bureau of Plant Industry began tests of rice in the Sacramento Valley, for three years on private land, and in 1912 on the Bigg's Rice Field Station. The crop in 1912 on 1400 acres, yielded 31,500 sacks, each of 100 pounds, at the rate of 22.5 sacks per acre. In 1922 the acreage had increased to 140,000 and the crop to 3,717,000 sacks, with an average yield of 26.6, the average rainfall being 20 inches, practically all falling from November to March. There are great differences in temperature. Among the weeds of the crop there are the Barn-yard Grass *Echinochloa Crus-galli* (which is well figured, p. 184), *Typha latifolia*, *Phalaris paradoxa*, and *Eleocharis palustris*—a strange mixture. In the Philippines there has been an increase in Rice culture exceeding that of the population, that is, from 750 million kilos in 1909 to 1893 millions in 1922. So, too, the production in India is in gigantic figures. In 1916-7 the Indian Empire grew 34 million tons of rice. Professor Copeland gives a reassuring statement as to the supposed linkage of malaria and rice growing. He shows from figures compiled by Professor Grassi that the diminution of malaria goes *pari passu* with rice culture, and that deaths of 85 per m. sunk to 14 per m. in three hundred years. Taking Italy as a whole, the malarial death rate from 1905 to 1909 was 14 per 100,000 whereas in the Rice area of Navara and Pavia it was only 2.4. This too seems to be the case in Spain and Portugal, and the author states that it is also the experience in

California. As he says, there are only two ways to eradicate malaria —one to break its life cycle within the body, the other to break it outside the body, by mosquito extermination. As a most valuable treatise on rice and its culture this work of Professor Copeland's should be in the libraries of all our Colonial agricultural establishments, and especially those of our Indian dependencies.

COTTER, Sir J. L. ALL ABOUT THE ROSE IN SIMPLE LANGUAGE. 8vo, pp. vii., 214. Andrew Melrose Ltd., London; 6/-.

COULTER, MERLE C. OUTLINES OF GENETICA, with special reference to Plant Material. Univ. of Chicago Press; 1 dollar 60 cents.

COVENTRY, B. O. WILD FLOWERS OF KASMIR. Ser. i., cr. 8vo. W. Thacker & Co., London; 24/-.

COWARD, T. A. LIFE OF THE WAY-SIDE AND WOODLAND: When, Where, and What to Observe and Collect. pp. viii., 216; tt. 111. F. Warner & Co., London and New York, 1923; 10/6.

CRISP, Sir FRANK, Bt. MEDIEVAL GARDENS: "Flowery Medes" and other Arrangements of Herbs, Flowers, and Shrubs grown in the Middle Ages, with some Account of Tudor, Elizabethan and Stuart Gardens, by the late Sir Frank Crisp, Baronet, LL.B., B.A., Treasurer and Vice-President of the Linnean Society of London. Edited by his daughter, Catherine Childs Paterson, with Illustrations from Original Sources collected by the author. Two vols., pp. 140, fig. 225 and 314. J. Lane & Sons, London, 1924; Six guineas. The lengthy title cited above gives an idea of the pictorial survey which Sir Frank intended to illustrate. As we are told in the Introductory note by Mrs Paterson, the notes descriptive of the subject and source of Mediæval Gardens have been collected from a very large number of MSS. and printed books. Sir Frank found none depicted earlier than the thirteenth century, but after 1450 they are more numerous, the period from 1450 to the end of the middle ages being the most prolific in literature. The author's industry in collecting was remarkable, as is evidenced by the extraordinary number of microscopes and of botanical books which he accumulated, and these sumptuous volumes bear evidence to the zeal with which he attacked so difficult a subject and the lavish expenditure it must have involved. In looking through the splendid process-prints culled from such various sources one sees the development of the art of gardening. Not, of course, are the oldest gardens shown; doubtless at Knossos some of the flowers depicted on the ceramics were grown in a garden. The recent photographic reproduction which appears in the *Journal of Egyptian Archæology*, no. x., 1924, shows a garden which was only last autumn brought to the light at Tell el'Altnarnah, in which a large number of square beds, each about 16 inches square, are surrounded by a small bank, through an opening in which the irrigating water entered, and the holes for trees are still visible. These protected squares recalled the garden at Sumburgh in Zetland, where the small enclosures with slabs of stone about two feet high sheltered from the fierce winds the delicately-tinted Nemesias which last August were in showy flower. The object of these Egyptian borders was perhaps to keep out pests or to maintain a moisture about the roots of the plants. But all through the Middle Ages the pleasure gardens appear to have been of limited extent and of formal arrangement, which had their culmination in 1550 in such gardens as those of the Villa D'Este. Naturally, the illustrations show many instances of anachronisms. The painter of sacred subjects gave the garden he was accustomed to see in his own vicinity, and Sir Frank says the Garden of Gethsamene is shown by all except one painter as a garden of their own time enclosed in a wattle fence or paling, the one exception being Berna of Siena (who died in 1381), who introduced some Eastern plants in his painting. Dr Warton, in his Essay on Pope, observes that the prints represent Paradise as "full of clipped hedges, square parterres, straight walks, trees uniformly lopped, regular knots and carpets of flowers, groves nodding at groves, marble fountains and waterworks," and these are all represented in these volumes. As the author points out, a picture of the Garden of Eden in 1500 shows a wattle fence, another of 1610 gives a lattice fence. The Middle Ages are roughly defined to be between the fifth and the fifteenth centuries, the latter date almost coinciding with the invasion of Naples by Charles the Eighth and the Discovery of America, but Sir Frank extends the period to 1534, the date of the English Reformation, a movement which was of special interest to Sir Frank, who was proud of the Puritans. The two types of gardens, the Herb Garden and Orchards, are described, the latter having then a different meaning from that now understood; then it was not limited to fruit trees, but included plants generally. The Orchards varied much in size, for Leland in 1540 says "that the leaves (of one tree) cast their shadow on the greater part of the orchard, while Charlemagne is said to have received the ambassadors of the last pagan King of Spain in an Orchard where 15,000 men were stretched upon a white carpet." A much more elaborate one is described by Albertus Magnus in his *De Vegetabilium* of the thirteenth century which has " pomegranates, pears, apples, laurels, and cypresses, and turf covered with climbing vines and fragrant herbs, behind the turf such as rue, sage, and basil, and flowers such as the columbine, violet, lily, and rose, and among the latter a mound of earth should be raised to form a flowery seat where one could sit and repose." The Orchard formed the Pleasaunce of the Middle Ages, but towards the end of the fifteenth century the garden began to take the place of the Orchard, and they were replaced in Queen Elizabeth's time with the "Gardens of Pleasure." Plants, Herbs, Flowers, etc., are then illustrated. It will be seen what a debt the Saxons owed to the Roman Invasion, the invaders being skilled gardeners who doubtless brought in to Britain among others the Lime, the Sweet Chestnut, Box, Laurel, Periwinkle, and Gilliflower—the latter a *Dianthus*. A list of plants which should be seen in a garden is given by the Abbot of Cirencester before 1217. It includes peonies, mandrake, dittany, lettuce (of which the early Egyptians were extremely fond), cucumber, drowsy poppy, amid many others, but although in the English gardens of the fifteenth century many native species were included, yet, after all, only a very small number of species were actually grown. The wealth of the Indies had not yet arrived. The "Special Features of Gardens" are alluded to in chapter v., emphasis being properly placed on the small area they occupied, an instance being given so late as 1775, when John Rae considered that twenty yards square was sufficient for a private gentleman's flower garden. Details are also given of the enclosing fence which in the fifteenth century was wattle or palings, the former made of Osier twigs, intertwined with stakes, much as the hurdles still made in Wiltshire, while iron palings more or less elaborately wrought were used in the fifteenth century, as is shown in the beautiful picture which is most delightfully reproduced in No. 124 by Quintin Matsys of the Virgin and Child, showing the fence and the Rose border. Privet, thorn, sweet brier, and yew were also much used. Flower beds, both as raised beds and flat oblong or square beds, which are said to be anterior to the use of circular beds, are treated of in chapter vi. There is nothing new under the sun, for in the Egyptian garden already alluded to there were not only square beds, chess-board fashion, but also circular beds grouped together. Chapter vii. treats of Knots and Parterres, the earliest illustration of Knots dating from 1499, but there are detailed descriptions of them given as early as 1467. Sometimes the knots outlined by plants had their beds filled with coloured earths—the prelude to carpet-bedding. One of my youthful remembrances is that of the vivid bit of colouring on the west side of that delightful house, Castle Ashby, but it may be held that this was more of a parterre into which the knot developed. Of these there are some delightful designs given on t. cxci. Smith's dust and iron-filings gave shades of black, and there was red sand and powdered tiles and brick-dust, which literally paved the way for the incoming of a more natural method of ornamentation, so that the floral contents and not the shapes of the beds stimulated the horticulturist rather than the designer. Labyrinths and Mazes are next mentioned, and many illustrations given, the average height of the fence being, as in that at Hampton Court and Hatfield, from three to four feet. A description of Fair Rosamond's Bower, which was a labyrinth, is quoted from Michael Drayton in 1631. Arbours, Pergolas and Galleries appear in chapter ix., many beautiful illustrations being given. Hornbeam and Lime were frequently used, and the pleached Ilex alleys, several hundred feet in length, are still retained at the Villa Gori near Siena. Topiary Work occupies chapter x., the art being an old one, for in Pliny's Tuscan garden there were animals cut in box. Curiously, there is no reference to the Yews which old Jacob Bobart fashioned at the Oxford Physic Garden before 1630, about which much has been written and to which poems have been dedicated. Turfed Mounds and Turf-topped Benches used for seats are mentioned in chapter xi. Either the climate was then drier or our forefathers feared damp less than we do now, for such curious and rheumatic-giving arrangements rather than wooden seats were fashionable. Nor was it an even turf on which the dalliers reclined, for the ends of the wattles were not cut off but left projecting, so Sir Frank humorously queries whether some extra cuticular development then existed which had not been transmitted to these later days, albeit it may have changed its place. The immunity was perhaps a question of education, since in its earlier stages the lounger began by reclining in troubadour fashion on "sweet herbes and flowers for nosegaies set upon seats for which Camomile, Pennyroyal, Daisies and Violets are seemly and comfortable." In chapter xi. Mounts are described which, when judiciously built, give dignity and an appearance of increased size. These were copied from Roman gardens. There were fine ones at the Louvre in the fourteenth century, the one at Wadham College is mentioned, and two figures of the more striking one at New College are included. Next are described Fountains, Spring Heads, Bathing Pools, Monastery Gardens, which go back to the ninth century; Castle Gardens, hardly less ancient, and of these some delightful examples are given. The last chapter (xvi.) is devoted to the "Hortus Conclusus," which appropriately brings the text to a conclusion, although Hortus Conclusus meant an enclosed garden. A delightful translation of a thirteenth century poem on the "Romance of the Rose" gives a vivid description of such a garden within a garden. There is a good Bibliography, in which, however, we find no reference to the First Catalogue of the Oxford Physic Garden, which, as it was the first of its kind in Britain, might have been mentioned, since many more recent and less important works are cited. But we must not end on a note of regret. The perusal of the splendid volumes has been a real enjoyment and the possessor of them may be proud of such an addition to his library, as one knows that, however grim the sky or dull the surroundings, the magician's carpet presented in these pages will waft the reader into brighter scenes under fairer skies. We are glad to be able to bear testimony to the careful and accurate manner in which the difficult task of editing this work has been accomplished by Mrs Paterson, and to the publishers for the very successful way in which they have so excellently done their part in the production of these golden volumes.

CURTIS' BOTANICAL MAGAZINE. Edited by Dr. O. Stapf. Vol. 149, pt. i., 1923; 17/6. Pt. ii., tt. 8990-9000, 1924; 17/6.

DALGLEISH, E. FITCH, Ph.D. MARVELS OF PLANT LIFE. pp. viii., 261; tt. 23, and 41 text figs. Thornton Butterworth, Ltd., London, 1924. One of the Thornton Butterworth "Marvel" Series. Fourteen chapters are devoted to describe these Marvels, with some good illustrations, and thus the reader is taught how plants feed, how they collect insects, how they give out light, how they feel and sleep, which being written in an easy and popular style may perhaps offer to those to whom text-book phraseology is repugnant a ready means to acquire a knowledge of plant life which otherwise would be a closed page to them. Sometimes one wonders if something is not lost in the process of popularising. We are told, for instance, that the Bladderwort "is a small plant, which floats at the surface of the water, except when in bloom, when it is raised up into the air and light." Would this not convey to the reader that the whole plant emerges from the water, whereas it is only the flower-stalk that rises above the surface. Nor has the last word been said upon the animal visitors to the bladders. There appears to be no reference to the discoveries of Sir Jagadis Bose, which might have been included in the Marvels and given " thrills " to its readers. Leaves and the Story of the Flower, Strange Marriage Rites and Customs, and the Seed and Fruit have many readable and some valuable notes. The Dispersal of Seeds, Self Protection and Giants are treated of, the last not necessarily those to whom a pituitary gland secretion is necessary, but big flowers, plants and trees. A good account is given of the discovery of the Victoria " regia " by Sir Robert Schomburgk, a name which is a pitfall from which Dr Dalgleish has not escaped, for he spells it with a terminal " h." The flower is the crest of this Society, but Schomburgk published it as *Victoria Regina*, as the original printed description and the lithographed figure show. In both cases it is called *Victoria Regina*, a name given by permission of Her Majesty. A full account of the discovery is published in the first Proceedings of our Society in 1839. Among these giants we see no reference to the Rattan, of which an account is given in this *Report*. Nor can we trust the measurement of 500 feet in height which is assigned to the Eucalyptus; nor is the girth of the great Chestnut of Mount Etna accurately given, since it is a hundred feet wrong. Its circumference is given as 80 feet, but Brydone says it was over 180 feet, and therefore if we can trust the measurement it was by far the biggest tree in the world. The book is well printed and illustrated, but we are again and again struck in this and other botanical works by the indiscriminate use or misuse of capitals for specific names. There is no excuse for this, since the *Index Kewensis* is consultable, and may be taken safely as a guide for the spelling of the names and for the use of capitals. Here we have *Californicum* spelled with a capital when it does not need it, but *Carica* which does with a small letter. The Brazilian botanist was George Gardner, not Gardiner. There is an excellent plate of the spotted orchis, which is represented by *Orchis Fuchsii*.

Dahlstedt, H. Nye Hieracium-Arter fra Denmark, in Bot. Tidskr. 241-252, 1922. Eight new species.

Dahlstedt, H. Taraxaca fran Vastra Norge Bergens Museums Aarbok, 1923-4, raekke n. 6 pp. 40. Includes several new species—*T. craspedotum*, *T. hilare*, *T. Landmarkii*, *T. atroplumbeum* of the Spectabilia; *T. Sellandi*, *T. pannucium*, *T. Piceaticeps*, *T. sinuatum*, *T. granvinense*, *T. oncolbum*, *T. ancistrolobum* (Taraxaca Scandinavica Exsicc. Fasc. ii., n. 16, 1912), recently found by me in Britain, *T. acroglossoides*, *T. decorum*, *T. convexum* and *T. occidentale* of the Vulgaria.

Danser, B. H. De Nederlandsche Rumex-Bastaarden, in Nederl. Kruidk. Arch., 1924. *Rumex abortivus*, *R. Dufftii*, *R. Steinii*, *R. callianthemus* (*maritimus* × *obtusifolius*), *R. Henrardi* (*maritimus* × *palustris*), *R. crispus* × *obtusifolius* = *acutus*, *R. crispus* × *obtusifolius sylvestris* (*R. acutus confinis*), *R. conspersus* (*aquaticus* × *crispus*), etc., are described. Weber einige Aussaalversache mit Rumex-Bastaarden, in Nederl. Tijdscrift, etc., dell v., afl. 2-3, 1924, includes × *R. Thellungii* (*dentatus* × *obovatus*) with excellent drawings of the perigone, *R. limosus* Thuill. (*conglomeratus* × *maritimus*).

Devonshire Assoc. Trans. (Science, etc.) 54-63, 1923. Fifteenth Botany Report. Edited by Miss C. E. Larter. Includes *Erica aurea* from Sticklepath, but we are not told in what condition this Cape Heath grows. The obsolete name *Sisymbrium panno-*

nicum is kept up. There appears to be no new county record of flowering plants.

DISCOVERY. A Monthly Popular Journal of Knowledge; 12/6 post free. Benn Bros., 8 Bouverie Street, London, E.C. 4. Hairy Plants, K. E. Styan, 294, 1924.

DIXON, H. H. THE TRANSPIRATION STREAM. 8vo, pp. 80. University of London Press, 1924; 2/6.

DIXON, H. N., M.A., F.L.S. THE STUDENT'S HANDBOOK OF BRITISH MOSSES, with illustrations and Keys to the Genera and Species by H. G. Jameson, M.A. Third edition revised and enlarged. pp. xlviii., 582, tt. 63. V. T. Sumfield, Eastbourne; Wheldon & Wesley, London, 1924, 24/-. To our British Moss collectors the advent of a third edition of this useful, scientific and popular Handbook is of great importance, since its author has kept so well abreast of modern thought and discovery that it is a most fitting text-book for students and one of which British Bryologists may well be proud. As the writer in his preface says: The plates have been entirely redrawn by Mr Jameson, with numerous emendations and additions, and are now reproduced by photography direct from the drawings themselves, every figure being drawn from nature. The late Dr Stirton described over 100 new British species, the value of which was more than doubtful. These have recently been examined by Mr Dixon, and have, when necessary—and this was usually the case—been reduced to the species, under which Stirton's name, for the convenience of foreign workers, has been put in synonymy. It may be said that the first edition of the Handbook was published in 1896, at 18/6, with 520 pages and 70 pages of figures; the second edition in 1904, at the same price, reached 586 pages and 75 plates of figures, while the present edition by judicious compression is reduced to 582 pages and 73 plates, but the Index has two more pages, showing that many additions have been included. It would have been interesting to have had a page devoted to the names of the actual additional species here described, but the accomplished bryologist, who doubtless has them at his finger ends, will not miss it. The able manner in which the species are described, the clear definitions of the genera, the vivid notes on the habitat are evidently the work of a master of his craft. It shows how far behind British Phanerogamic botany is left, whose most modern text book is but a rechauffé of very old and inadequate material. One wishes that a few more localities had been given, even if there had not been room for a full comital distribution, but such additions would increase the bulk and the expense. One would also have liked the date and discoverer of each of the British species. We may add a word of praise to the printer, who has used a clear and readable type, and well displayed it, to the draughtsman for his beautiful and accurate figures, and to the way in which these drawings have been reproduced. We heartily congratulate our member upon the production of a really valuable text-book, for which we hope an extensive sale, indispensable as it is to every bryologist. No public library should be without such a standard authority.

DONCASTER, L. AN INTRODUCTION TO THE STUDY OF CYTOLOGY. Ed. 2, 8vo, pp. xiv., 280, tt. 24. Cambridge University Press, 1924; 21/-.

DYKES, W. R. A HANDBOOK OF GARDEN IRISES. 8vo, pp. 250, 1924. Martin, Hopkinson & Co.; 12/6.

ECOLOGY, JOURNAL OF. The British Ecological Society; subscription 35/-. Hon. Sec., Dr E. J. Salisbury, The Briars, Crosspath, Radlett, Herts; editor of Journal, A. G. Tansley. Contains among other papers: The Hornbeam in Britain, Miller Christy. On the Ecology of British Beechwoods, with special reference to their Regeneration, A. S. Watt (pt. 2, 145). Plant Successions of the Brush-Prairie in North-West Minnesota, J. Ewing (238). The Edaphic Factors accompanying the Succession after Burning in Harpenden Common, T. Eden (267). Studies on the Ecology of English Heaths, V. S. Summerhayes, L. W. Cole, and P. H. Williams (287). *Primula elatior*, supplementary note, Miller Christy (314). Note on the Ecology of Radipole Lake, R. D'O. Good and C. D. Day (322).

EDINBURGH, TRANS. BOT. SOCIETY. *Carex microglochin* in Scotland, G. C. Druce, p. 7. Scottish Taraxaca, G. C. Druce, p. 4. Additions to the Orkney Flora, Col. H. H. Johnston. Includes

Taraxacum sub-simile, but it awaits H. Dahlstedt's further study. Notes on Caithness Plants, Arthur Bennett, p. 54. Notes on *Potamogetons*, Arthur Bennett, p. 45, suggests the American form of *P. zosterifolius* should be named on account of its fruit character var. *americanus*. He names a new species *P. Hagstromii*, a plant from British Columbia.

ENGLER, A. DAS PFLANZENREICH: Euphorbiaceae-Crotonoideae-Acalypheae-Acalyphinae. F. Pax & K. Hoffman, Euphorbiaceae Addit. W. Engelmann, Leipzig, 1924; 14/60 gold marks. Band 10 MUSCI (Laubmoose). pp. iv. 478. W. Engelmann, Leipzig. 1924; 30 gold marks.

ERITH, ADELA GWENDOLEN, B.Sc. WHITE CLOVER (TRIFOLIUM REPENS L.). Monographs of Agricultural Plants, edited by Professor John Percival. pp. viii. 150, tt. 75. Duckworth & Co., London, 1924; 18/-. These valuable Monographs promise to give us a much-needed exposition of the history of our cultivated plants, the origins of many of which are still shrouded in the mists of antiquity. Professor Percival has already given a splendid work on the Wheat Plant, which is reviewed in our *Report*. That was a gigantic task to accomplish, dealing as it did with all the numerous varieties of the corn which forms in Britain the "Staff of life." Necessarily, the White Clover, which is limited to more restricted use among domesticated animals, has not the primary importance of the Wheat. But there were problems to solve, varieties to describe, and researches to be carried out upon the morphology, anatomy, and development of the plant, which Miss Erith has carried out in an extremely able manner. As she says, White Clover ranks among the "foremost of the world's pasture plants." It has a wide range of growth, occurring throughout Europe and extending throughout Siberia, Syria, and Palestine, and from the Caucasus through Central Asia to Lake Baikal. It occurs in Tibet and ascends to 20,000 feet on the Himalayas. It is widely spread in Africa and has been recorded for Greenland. It is largely cultivated in America and specimens were sent by Clayton from Virginia before 1739, but these may have been introduced, not native, specimens. I saw it with other English weeds near Newcastle in Jamaica, but there it was certainly due to introduced hay. The seeds pass through the intestinal canal of horses or cattle, and Miss Erith quotes, 5370 clover seeds were taken from one pound of dried residue taken from a liquid manure-barrel. Of these 62 per cent. were germinative. They are small, so that two thousand of them only weigh a gram. An excellent account is given of them, together with the most likely impurities. There is a detailed morphology of the seed, the root-system and the bacterial-nodules, which are infected with *Bacillus radicicola*. To these it is that the rapid improvement in pastures is chiefly due. The morphology of the plant as a whole is well explained, and a reference is also made to the "Movements of the Leaves," for the leaves of the Clover at night assume a very curious position, of which a figure is given. This is supposed to prevent or to greatly limit, dew-deposit. The Morphology of the Flower is well done, and the excellent text-figures aid the student materially. As Darwin proved, fertilization is mainly carried out by bees. The account of the fertilization and development of the flower is an excellent piece of work which deserves high praise. The White Clover is first figured as *Weyssz Fleyschblum* in Brunsfels Herbarum of 1531, and in 1540 (Herb. pars. 3) he gives it the name of *Trifolium album*. a name which it is a pity Linnaeus did not conserve. Later on the herbalists confused it with white forms of *T. pratense*. Miss Erith gives the varieties of *T. repens* L., and figures, and well describes each, giving comparative measurements of plants grown under the same conditions. Allusion is made to the occurrence of cyanophoric glucosides in this plant. This in Britain is well nigh negligible. but in North America has occasionally had serious effects upon stock. The point that occurs to one is, may not it be developed in greater quantities during the drying stage, *i.e.*, that is, when fermentation takes place in the withering plants? The var. *purpureum* has an older synonym, which is cited—*fusco-maculatum* Godet, a much more cyanophoric plant; the var. *grandiflorum* Peterm. is our Zetland plant; var. *rubescens* Seringe is Babington's *Townsendii* from the Scillys, which occurs sporadically in other parts of Britain; the var. *Biasolettii* Steud. is from the Mediterranean and Adriatic regions, and *Orphanideum* Boiss. is from Greece and Italy; *macrorrhizum* (Boiss.) is from Cilicia and Cappadocia, while *ochranthum* Maly is only known from Bosnia. Miss Erith also gives a chapter on teratological forms, among which is the four-leaved clover, the form with the curious inflorescence, *Trifolium album umbella siliquosa* of Merrett, while the phyllody of the calyx is shown in *T. repens*, var. *phyllanthum* Seringe, but these occurrences, despite an immense amount of published literature, still await a definite explanation. The "varieties and their agricultural value" is one of supreme importance to the farmer, and these receive adequate treatment here. A good " Bibliography " is another important feature which Miss Erith has not lost sight of. We most heartily congratulate her upon bringing her long labours to so successful a result.

FARMER, Prof. J. B., has an interesting letter in *Nature* ii., 86, 1924, on Leaf-Mould, of which he notices the formation is inhibited when the surface-soil consists of heavy, especially calcareous soil, whereas sand or gravel promotes its formation. "Such an acid soil by not neutralising the products of bacterial action, would conduce to the arrest of bacterial activity and so provide the requisite condition for leaf-mould formation," and this he was able to confirm. The matter is an important one to the field-botanist, since plant occurrences are greatly influenced by the presence or absence of leaf-mould. W. H. Pearsall, the son of our member, has a paper on "The Ages of Peat Deposits," *Nature* ii. 830, 1924.

FERNALD, M. S. Contributions from the Gray Herbarium of Harvard University, no. 63, pp. 87-300, 1921; see also *Rhodora* 1921, and Notes on the Flora of Western Nova Scotia, 1921, *Rhodora* xxiv., pp. 157-208, 1922. A valuable contribution to our knowledge of the flora of that region. The main result was the discovery or verification of many coastal plants. The itinerary abounds with interesting notes and in the systematic list of plants noticed. There are some most valuable observations. The author follows the International Rules—but international uniformity of names seems as far off as ever. *Thelypteris* (notwithstanding Christensen's Index) is used instead of *Dryopteris*, so our Male Fern is *Thelypteris Filix-mas*, and presumably the Marsh Fern must be *Thelypteris Thelypteris* (L.) comb. nov., but Fernald uses *T. palustris* Schm. Our Meadow Sweet is *Filipendula Ulmaria* and our Yellow Lily, a *Nymphozanthus*. *Glyceria* is replaced by *Puccianella* so far as *maritima* and the allies are concerned. Our *Circaea intermedia* is quite correctly called *C. canadensis* Hill, and *Atriplex glabriuscula* Edm. is used instead of the later *Babingtonii*. A most suggestive note is that on *Polygonum lapathifolium*, which we will allude to later. Fryer's (wrongly spelled Freyer) *Potamogeton varians* is made *P. gramineus*, var. *sphathulaeformis* Robbins. A "new" hybrid, *Drosera rotundifolia* × *longifolia*, is described, but it has already been established by Collier (*Schrift. Schles. Ges.* ii., 84, 1892). It may be remarked that *Glyceria maritima* is as polymorphic there as here as is also *Agropyron repens.* We heartily congratulate our honorary member for this excellent work, and we cannot forbear culling a practical note. In drying certain plants every collector must have been annoyed by the way in which the petals of certain flowers (*Ficaria*, *Pinguicula*, *Anemone apennina*) curl up when put on the drying sheet. Fernald "impulsively tore off a bit of newspaper, moistened it with his tongue, and applied it to the curling petals and leaves, with the instant result that they were held closely to the pressing paper. The slips are left in press, and eventually flake off." He calls the method "salivation," but for this salvation of the plant he claims no patent rights. *Polypodium Virginianum* and *P. vulgare*, *Rhodora*, July 1922, gives the history and distinguishing features of the two species. The Dwarf Antennarias of North-Eastern America, *l.c.* 95, 1924, with clavis of 11 species. On the Eastern Representatives of *Arnica alpina* with clavis of 8 species. Some Senecios of Eastern Quebec and Newfoundland.

Fournier, P. Florule de poche des genres et espèces complexes ainsi que de leurs hybrides pour la flore parisienne et les regions du nord, du centre et de l'est de la France. Fasc. i., pp. 32. l'auteur Ibis, Rue des Alliés, 1924; 3 fr.

Frey, Ed. Vegetationverhaltnisse der Grimselgegend. pp. 197. Mitt. der Naturf. Gesellsch. Bern, 1922.

Gamble, J. S., F.R.S. Flora of the Presidency of Madras. Cr. 8vo. Pt. 6: Scrophulariaceae-Plantaginaceae. pp. ii., 963-1160. Adlard & Son, West Newman, London, 1924; 10/-.

Garlick, Constance. An Introduction to Botany. pp. 410. C. W. Daniel, London, 1924; 21/-.

GARDENERS' CHRONICLE for 1924. This old-established and ably edited weekly paper, published at the low price of sixpence a copy, contains many things of great interest not only to the florist but to the taxonomist. Mr Kingdon Ward gives a readable account of his eighth visit to India and China. The Rev. Hilderic Friend, of Earth-worm fame, gives several articles on the Garden-Craft in the Canticles. There are delightful accounts of Walhampton, the seat of Lord and Lady St Cyres, and of Westonbirt. There are articles on the Germinating Power of Seeds, a well-reported account of the International Botanical Conference, of Sir Frederic Keeble's lecture at the Royal Institution, and an able paper by D. J. Parkin on the Classification of Flowering Plants, in which we are glad to see a brief is held for the De Candollean method of starting with the Ranales rather than with the Ferns. This view is also, we are glad to see, supported by Mr J. Hutchinson.

GATES, Prof. R. RUGGLES. Species and Chromosomes, in Nature ii., 353, 1924.

GAYER, GYULA. Prodromus der Brombeerenflora (*Rubi*) in Ungams Maygar Bot. Lapok. i., 44, 1921. 59 species; 600 names.

GEIKIE, Sir ARCHIBALD. A LONG LIFE'S WORK. Macmillan & Co., Ltd., 1924. This interesting Autobiography, which appeared in 1924, was too soon followed by the death of the author, who was born in December 1835, and passed away from us in November 1924. He has described for us a strenuous life, for the amount of splendid work he accomplished in his 88 years was indeed immense. As has been the case with many others who became famous in their own line his parents were opposed at first to the career in which he was destined to do so much. They wished him to be a lawyer, but his mental bias was too strong in the direction of natural science, and that bias was speedily turned, by the perusal of Hugh Miller's "Old Red Sandstone," to the special subject of Geology. As a boy he got the name of "The lad of the stones" from the canny Scotch country folk who watched him in his walks and considered him to be obviously a little weak in the head. His success in his education at the High School and University of Edinburgh showed that he could have been a classical professor instead of a geologic one had he chosen to follow that line, but this was not to be, and at 20 he became an assistant in the Geological Survey, and in that work, finally as Director General, he worked for 46 years. Through all that time he was perpetually " in the field," at first traversing and studying every part of Scotland and afterwards getting new light from other countries—light on " Volcanism " (one of his favourite branches) from Auvergne, the Eifel and Italy and from the lava fields in Western America ; light on Ice Action from glaciers in Norway and Switzerland ; light on Denudation from the Highlands, increased by his travels in Auvergne and the " Wild West " of America ; light from the microscope (to which he was introduced by Sorby) on the history of rocks and minerals through the study of their minute structure. Thus did the enthusiast and genius turn everything to advantage in tracing the past story of our globe. He could not escape the many geologic controversies which unavoidably divided schools of thought in a science which was feeling its way. Just as previously the war had raged at Edinburgh between the " Neptunists " and the " Plutonists," whose " rival theories of Water and Fire were discussed (according to Brewster) with all the warmth or even bitterness of political or theological controversy," and ended, says Sir Archibald, " with the ultimate discomfiture of the Neptunists," so in his early days the controversy raged between the Cataclysmic and the Uniformitarian schemes of Geology. It must have been a grief to him to have to differ from his teacher and friend, Murchison, who was of the Cataclysmic faith, on this subject, but his realisation of those wonderful powers of Sub-aerial erosion, which he continually observed in his travels, made him an advocate of the view that most of the work of the sculpture of the earth's surface had been done by those forces of Nature which we still see in operation. Still later came the controversy as to the way in which the glaciation marks on the rocks had been produced, whether by floating ice when the land was submerged, or by great sheets of land ice that once covered the country. Sir Archibald's study in 1861 and 1862 of the smoothed and striated rock surfaces in Scotland convinced him of the truth of the latter theory, as propounded by Louis Agassiz twenty years before. Finally came the controversy as to the possible length of Geologic time, and he combated in a lecture Lord Kelvin's *minimising* views on the subject. More recent discoveries have shown that, however accurate Lord Kelvin's deductions may have been from the data before him, those data were not by any means the whole of the factors in the problem. The eye for scenery which was one of his possessions and which he was constantly exercising in his travels made him, as in his work on " The Scenery of Scotland viewed in connection with its Physical Geology," an admirable exponent of the way in which beautiful scenery has been the result of geologic changes and he records his delight in the saying which he quotes from Sir Thomas Browne's " Religio Medici," that NATURE IS THE ART OF GOD. A man, as those who knew him say, of charming personality, he had from his prominent position the opportunity of meeting a great number of the distinguished men of his day and gives us often in this memoir interesting little notes of their conversation and characteristics. He had too a fund of humour and a treasure of amusing stories some of which he gives us, as for example the quite impossible way in which Gladstone assured him that he took castor oil by putting first into a wine glass a " couche " of water, then the oil and lastly another layer of water which was supposed to remain on the top of the oil! A funny geologic story is that of the spreading bullet marks on the face of a rock which an eminent palæontologist maintained, until enlightened, to be of organic origin. A good recipe for a long life was that given by an old woman in Cumberland :—" I married a tinker and lived for sixty years under the hedges!" It is an interesting lesson on the properties of the Solanaceae when he tells us that the smoking after the dinners of the Literary Society compelled both him and Sir Theodore Martin to give up their attendance at them—Sir Archibald because of its effect on his eyes and Sir Theodore because it rendered him " utterly prostrate " next day. A practical piece of geologic or more strictly of chemical experience is his caution against the use of white marble for monuments in the open air. He found that they speedily decayed. The great Geologist's memory was at fault when he tells us that Sir Francis Galton died six weeks after he was knighted. It was in fact a year and seven months before his death that he received the honour—an honour, which in view of the great and varied contributions to science made by Galton, had been too long delayed. Let us hope that Sir Archibald was equally mistaken when he tells us, on the authority of Professor Pillans, that an infant class of little tots four or five years old was asked " How long did Jeroboam reign over Israel?" When his well-earned retirement came his early classic education led him to visit Horace's Sabine valley; Sulmona, the birth place of Ovid; Sirmione, " the home that Catullus loved," with the idea of discovering how far the influence of their surroundings could be traced in their poetry, and it is delightful to see how the working at strict science for so many years failed to injure his devotion and to his enjoyment of literature. He held so many offices, as well as that of Director-General of the Survey and (that highest of scientific honours) the Presidency of the British Association and he poured forth his knowledge in so many admirable books that we may truly describe his long career as indeed a well-filled life.

F. BENNETT.

GILBERT WHITE FELLOWSHIP. Subscription, 7/6; Hon. Sec., Miss W. M. Dunton, 18 Crockerton Road, Wandsworth Common. S.W. 17. Paper on the Rev. Gilbert White and Moral History read by Sir D. Prain on Jan. 24, 1924.

GLUCK, HUGO. BIOLOGISCHE UND MORPHOLOGISCHE UNTERSCHUNGEN UBER WASSER UND SCHWIMMBLATTFLORA. G. Fischer, Jena, 1924; 25 gold marks.

GOEBEL, Prof. Dr K. VON. DIE ENTFALTUNGSBEWEGUNGEN DER PFLANZEN UND DEREN TE ELEOGISCHE DEUTUNG. Ergungs Erganzungsband zur organographie der Pflanzen. Ed. 2. pp. x., 565. G. Fischer, Jena, 1924; 20 marks.

GROVES, JAMES, and Canon G. R. BULLOCK-WEBSTER. THE BRITISH CHAROPHYTA. Vol. ii.: Chareae. pp. xii., 129, tt. 21-45, with explanations, figs. 27-31 in text. Printed for the Ray Society, London, 1924. This volume splendidly completes the *Charophyta*, of which the first volume was reviewed in this *Report*. In the second volume the same high standard of excellence is maintained. The Chareae are divided by the authors into three genera—(1) *Nitellopsis* Hy., which has a single representative in Britain, *N. obtusa*, formerly known as *Lychnothamnus stelliger*, of which the headquarters are the Norfolk Broads, in which at Filby Mr Arth. Bennett first discovered it in Britain. (2) *Lamprothamnium*, which again is only represented in Britain by one species, *L. papulosum*, once known as *Lychnothamnus alopecuroides*, which has a very limited distribution in Dorset and the Isle of Wight. My last visits to Hamworthy failed to reveal it. (3) The genus *Chara* now has 17 species, as against 12 given in my *List*, but *rudis*, *denudata*, *desmacantha*, and *delicatula*, which appeared as varieties there, are now given specific rank, and Canon Bullock-Webster has discovered in Ireland a new species, *C. muscosa*. We may add that *C. vulgaris* has an additional variety, *refracta*, but as the var. *melanopyrena* is withdrawn the numbers remain unaltered. Under *C. hispida* the vars. *gymnoteles* and *macracantha* are reduced to formae, while *horrida* is now referred to *hispida* proper. *C. denudata* is at present only known from Brittas Lough in West Meath, where it was discovered in 1892 by Mr Levinge. The new species, *C. muscosa*, was discovered by Canon Bullock-Webster in Lough Mullaghderg, Donegal, in 1917. A new variety is added to *C. baltica*, namely, var. *rigida* Gr. & B.-Webst., from Hickling Broad in 1898. Our old *C. polyacantha* Braun has its name changed to *C. aculeolata* Kutz., which was published 27 years before Braun's name. From *C. aspera* the var. *capillata* is dropped and *desmacantha* raised to a species. The variable *C. fragilis* has now only one variety given, *i.e.*, var. *Hedwigii*. To the distribution Bucks and Oxon may be added. The one-time var. *Sturrockii* is thought possibly to be a hybrid with one of the Diplostichae. *C. delicatula* is now separated from *fragilis* and to it is put var. *barbata* and the new var. *annulosa*, which was the *C. fragilis*, var. *delicatula*, figured on t. 207, in *Journ. Bot.* 102, 1880. This I have collected at Tingwall and Asta, Zetland. Mr Groves contributes a valuable paper on his laborious researches into the Geological History of the *Charophyta*. Beginning with the Paleozoic era are organisms which have been referred to this group, but the earliest remains which without doubt may be referred to Charophytes have been found in the Lower Coal Measures of Nova Scotia. In the Mesozoic era the Chipping Norton beds (Middle Oolites) in Oxfordshire yield *C. Bleicheri*, but the most productive source of these remains is to be found in the Middle Purbeck Beds of Dorset. The author says that the very specialised form of fruit which has remained practically unchanged from the Carboniferous era to the present time seems to point to their being a very ancient and distinct type of vegetation, and not, as some authors suppose, merely a subordinate group of *Algae*. Canon Bullock-Webster gives an extremely practical chapter on how to collect and preserve these brittle organisms, which often appear in our Herbaria as dusty fragments. Those who have seen his beautiful speciments will assuredly wish to follow his advice if they cannot attain to his results. There is a copious Bibliography and a good Index to the two volumes. A new variety of *Nitella opaca*, *i.e.*, var. *brachyclema*, is also described. It is frequent in Loch Spiggie and Brou Loch, Zetland. One would fail in one's duty if attention was not called to the excellence of the plates, from the talented hands of Miss Mary Groves, and to Messrs Whittingham and Griggs for so skilfully reproducing them. The whole work is most useful and sets a high standard which other monographers will have difficulty in reaching. We may here also draw attention to the beautiful Exsiccata which were issued by the authors in 1924 at a guinea for each of the two sets. A few of these are still available.

Haines, H. H. The Botany of Behar and Orissa. Part v. . Apetalae. pp. 755-1058. Adlard & Son, West Newman, London. 1924.

Harshberger, Prof. John W. The Plant Life of Scandinavia. He shows a photograph of *Asplenium septentrionalis*. The Third International Phytogeographic Excursion to Switzerland in 1923 is described in Ecology v. 287, 1924. The Gardens of the Faeroes. Iceland, and Greenland, in Geograph. Review xiv., p. 404, July 1924. *Archangelica* (Kvan) is said to be indigenous in Iceland, where Kvanhaven is named from it. Some Old Gardens of Pennsylvania, in Pennsylv. Mag. of Hist. and Biog. 48, Oct. 1924. The first Botanical Garden was founded there by the Rosicrucian fraternity, but the most celebrated is that of John Bertram (born in 1699); some of the trees still survive.

Hendry, George W. Alfalfa in History, in Journ. Amer. Soc. Agron. 171-6, 1923. Originally from Mesopotamia, thence to Arabia, Egypt, Greece, and Italy. Introduced to China 126 B.C, HIRST, HAROLD M. How to start a Herb Garden, in Pharmaceutical Journal 296 and 332, March 1924, gives practical advice on this matter. Mr Hirst has himself been most successful at Ashburn, Scarborough, where he has made one which is of great public interest.

HOFFMANN, Dr JULIUS. ALPINE FLORA, for Tourists and Amateur Botanists, with Text descriptive of the most widely distributed Alpine Plants. Translated by E. S. Barton (Mrs A. Gepp). pp. xiv., 121, tt. 43, and 283 figures; New Edit. Longmans, Green & Co., London, 1925; 12/6. This is the second edition of a popular book, in which an opportunity has been taken to incorporate four new plates, which appeared in the second German edition under the editorship of Prof. K. Giessenhagen of Munich. These treat of Rushes, Sedges, Ferns, Lycopods, Mosses, and Lichens. Even now the Carices and Junci are inadequately represented, considering the numbers met within the area. The book supplies a real want, as so many British botanists feel when they visit the Alps, since either the Floras are too cumbersome and costly, or are written in a language which offers a stumbling block to the reader. Armed with this and with the more complete and scientific *Flora der Schweiz* of Schinz and Keller, the tourist will be able to correctly identify the majority of plants met with. In this volume, by the Alps is meant an area which covers not only Switzerland but the Bavarian highlands, Tyrol, Salsburg, Styria, and Lower Austria. The arrangement is not Englerian and begins with the Ranunculaceae. We may instance that seven Anemones are described and five figured; 14 Ranunculi and 9 figured; Potentillas, of which only four are given, seems inadequate considering how common *P. verna*, *Crantzii*, and other species are, but there are 16 Gentians, all with good figures. *Oxytropis campestris*, which with us exists as a dull yellow flowering plant, is the var. *sordida;* in the Alps a blue-flowered form, var. *caerulea*, occurs, but the common or typical plant has bright yellow blossoms tinged with red, resembling one of our forms of *Anthyllis Vulneraria*. Our blue sowthistle is kept in the genus *Mulgedium*, but the flowers are given a more vivid blue than we see. *Scirpus caespitosus* appears as *Trichophorum Caespitosum*, but the capital in the species name is unnecessary and might have been used in *Botry-*

chium Lunaria, where it is needed. There is a useful glossary; the book is well printed; the plates, though a little too vivid in colouring, are well drawn, and the volume is in a portable form. Owing to the leaves not being sewn, but stuck in the cover, they rapidly become detached, and it would be well either to have it rebound or enclosed in a portfolio.

Howarth, W. O., M.Sc. On the occurrence and distribution of *Festuca rubra* in Britain, in Journ. Linn. Soc. xlvi., 313, 1923. Here Mr Howarth suggests three species—*F. heterophylla* Lam., *F. rubra* L. emend., *F. juncifolia* St Am., which are differentiated by (A.) ovary hispidulous, branches mostly intravaginal = *heterophylla;* (B.) ovary glabrous = *rubra* and *juncifolia*. The two latter are separated by branching and leaf characters. Under *rubra* as subsp. are *genuina* and *fallax*. The former has a var. *grandiflora* (Hack.), a var. *tenuifolia*, and *glaucescens*. Here is var. *dumetorum* (L.). He thinks that all Hackel's forms of *genuina* are true varieties: *vulgaris* (this includes Syme's *duriuscula*), *grandifolia, dumetorum, tenuifolia, glaucescens, juncea* (includes *duriuscula* Asch.), *arenaria, planifolia*. His examination of the Linnean Herbaria induces him to construe *dumetorum* in a different sense to Hackel. (It will be remembered that Hackel named only the Skegness plant as *dumetorum* which was afterwards found in some other places on the East coast.) One is quite in accord with Mr Howarth in keeping *heterophylla* as a distinct species and also *juncifolia*. He gives the contrasting features of it and *rubra* with *arenaria*, with which it may be confounded.

Irish Naturalist. Eason & Sons, Dublin, 1923, 12/-; 1924, 15/-. Edited by R. L. Praeger. Down and Antrim Plants, 96, 1923, Corrie D. Chase. Notes from Co. Down and Armagh, A. W. Stelfox. Some Reflections on the Irish Alpines 117, 1923, R. F. Scharff. *Spiranthes Romanzoffiana*, 73, 1924, M. C. Knowles. From this we gather that H. Mousley (*Orchid Review*, Mar 24, 1924) traverses Colonel Godfery's reference to Drummond's supposed "ambiguous statement," since his experience differs considerably from that of Colonel Godfery. He thinks that the difference between the north and south *Spiranthes Romanzoffiana* may be due to habitat. One's own experience is that when Orchids grow in open exposed situations the leaves become shorter and broader, cf. *Habenaria viridis*, var. *ovata* and type, and *Liparis Loeselii*, var. and type. When the plants grow with other foliage the tendency is for the leaves to become long and narrow. Mousley believes in the identity of the Irish and American plant, and that *gemmipara* is purely synonymous. New County and Vice-County Records of Irish Plants 33, 1924, R. W. Phillips. A very valuable list.

JACKSON, Dr B. DAYDON. Botanical Illustration from the Invention of Printing to the Present Day, in Journ. Royal Hort. Soc. xlix., 1924, gives most interesting details of the three main methods employed. The History and Compilation of the *Index Kewensis*, *l.c.* 224-229, 1924.

JENKIN, T. J., M.Sc. The Artificial Hybridisation of Grasses. Univ. Coll. of Wales. Welsh Plant Breeding Station. W. Walker, Shrewsbury. pp. 18, 1924; 3/6. Among other crosses Mr Jenkin has succeeded in obtaining *Festuca rubra* × *Lolium perenne* and *F. elatior* and *Lolium*. Extremely interesting and valuable. Considering the great variability of the acknowledged hybrid grass, *Lolium festucaceum*, these may well be grouped in this plant of very different parentage. I would suggest crossing *F. elatior* or *pratensis* with *Glyceria fluitans* or *plicata*. I believe plants which I found near Chichester to have that origin. It may be added that Mr Jenkin had negative results in crossing *Dactylis* with *Lolium* and with *Arrhenatherum*.

JEKYLL, GERTRUDE, and Sir LAWRENCE WEAVER. Gardens for Small Country Houses. Fifth edition; demy 4to; pp. 312. Country Life, London, 1924; 25/-.

JOHNSON, WALTER. THE NATURE WORLD OF LONDON: Trees and Plants. 8vo, pp. viii., 118, tt. 8. The Sheldon Press, New York and Toronto; Macmillan & Co., 1924; 3/-.

JOHNSTON, IVAN M. Studies in the Boraginaceae. Contributed to Gray Herb. Harvard Univ. lxxiii., 42, 1924. with clavis to genera. *Nonea* (not *Nonnea*) Medik. is used, as is *Lappula* Moench. *Mertensia* of 1797 is kept up instead of the earlier *Pneumaria* Hill.

1764. The genus *Omphalodes* dates from Miller Abr., 1754. *Amsinkia* is retained despite the earlier *Benthamia* of Lindley, which, if the Cornaceous genus *Benthamia* is sunk, is available.

JOHNSTONE, JAMES, D. Sc., ANDREW SCOTT, A.L.S., and HERBERT C. CHADWICK, A.L.S., with an Introduction by Sir William A. Herdman, F.R.S. THE MARINE PLANKTON, with special reference to Investigations made at Port Erin, Isle of Man, during 1907-14. pp. xvi., 194, tt. 20, graphs 6. University Press of Liverpool, 1924; Hodder & Stoughton, London; 12/6. The matter is too technical for elaboration in these pages, but the book, as the authors' preface says, is primarily a student's guide to a practical knowledge of the marine plankton and a general discussion of the many interesting problems that arise when one studies the drifting microscopic life of the seas. It is also a record of a special series of observations which for over fourteen years have been carried on at Port Erin, so it is a positive contribution to our knowledge of marine plankton. Only a few of the more important organisms that have been identified and enumerated are considered in the present volume, but many others are being drawn and as far as possible identified, and these will from time to time be published in the Annual Reports of the Port Erin Biological Station. It is arranged that subscribers to the present work will be able to have copies. As Sir William Herdman in his preface says, it was in 1846 that Johannes Müller took Ernest Hackel and other students to Heligoland and showed them how to use the tow-net in the North Sea. Little was known of what they then called "Auftrieb." The word Plankton was not invented till 40 years later by Hensen. It was on the Challenger Expedition that John Murray with his simple open tow-nets planned out the main lines of our knowledge of plankton distribution—vertically and horizontally. The late Professor Herdman speaks with great experience and he gives very high praise to the work of the authors of this book, which he says is both practical and theoretical. The student requiring to identify his plankton can use its plates (which are excellent) and descriptions as a work of reference, while the more philosophical biologist can follow Professor Johnstone's enquiries into the reasons of the phenomena. To those who ask cui bono? Prof. Herdman says that, as a result of Edward Forbes' zoogeological work in Asia Minor, it has been shown that the wanderings of a mollusc may have determined the career of Alexander the Great. So, too, all the life of the sea, and ultimately on land also, may depend for its existence upon the reproduction in spring of the lowly microscopic diatoms of the Plankton. To those who wish to pursue the study of Oceanography it is indispensable, and even "cross-word" workers may have to refer to it to discover what those blessed words Benthros and Nekton mean, while the scientific investigator will be glad to have its practical information as to the construction and use of plankton nets and for the preservation of its not always odorous catches.

JONES, W. S. TIMBERS AND THEIR IDENTIFICATIONS. 4to, pp. xi., 148. Clarendon Press, Oxford, 1924; 15/-.

JOURNAL OF BOTANY, British and Foreign. Vol lxii., 1924. Edited by J. Britten. Flora of Steart Island, by H. S. Thompson, p. 1. Notes on British Charophyta, by James Groves and Canon G. R. Bullock-Webster—*Chara muscosa* nov sp. and *C. baltica*, var. *rigida*, p. 33. *Orchis latifolia* L.: A Historical Study, by Colonel Godfery, p. 35. Tautonyms, Nomina Abortiva, and Homonyms, by T. A. Sprague, p. 41. New South African *Campanulaceae*, by R. D'O. Good, p. 48. The Vitality and Distribution of Seeds, by T. A. Sprague and J. R. Matthews, p. 50. Notes on Collecting Roses, by Lt.-Col. A. H. Wolley-Dod, p. 52. The Hepatics of Herefordshire, by E. Armitage, p. 67. Imperial Botanical Conference, p. 79. The Origin of Constant Species, by E. Almquist, p. 97. Notes on Pembroke Plants, by H. W. Pugsley, p. 102. Notes on Mexican *Tiliaceae*, by T. A. Sprague, p. 106. Reproductive Mechanism in Land Flora, by A. H. Church, pp. 108, 139, 209, 268. *Thymus tenuifolius* Miller, by A. J. Wilmott, which he says=*T. vulgaris* L., p. 113. A new *Statice* in Britain, by H. W. Pugsley, p. 129. Plants from Jebel Marra, by Cecil Norman, p. 134. Superfluous Nomina Conservanda, by T. A. Sprague, p. 143. Ferns Grown under Bottles, by C. E. Benham, p. 146. New Tropical African *Lentibulariaceae*, by R. D'O. Good, p. 161. The Type Specimen, by A. S. Hitchcock, p. 166. Vegetation of Steep Holm, by R. C. M'Lean and H. A. Hyde, p. 167. The British Dactylorchids, by M. J. Godfery. T.

Stephenson, and T. A. Stephenson, p. 175. Trinomials, by T. A. Sprague, p. 178. *Gentiana uliginosa* Willd. in Britain, from Tenby, p. 193. No mention by Mr Pugsley is made of the record in the *Annals of Scot. Nat. Hist.* 173, 1906. Proposed Alterations in the International Rules, by T. A. Sprague, p. 196. *Orchis Fuchsii*, G. C. Druce, p. 199; Col. Godfery, p. 201. Some New British Roses, by Lt.-Col. Wolley-Dod, p. 202. A large number of new hybrids are given, *e.g.*, *R. scotica* (*spin.* × *mollis*) Marshall (n. 2936 and 2904; Banff); *R. mayoensis* Mayo, Marshall (1625), but surely it is undesirable to have two names for the same hybrid combination; *R. Barclayi* (*spin.* × *omissa*) Auchterarder, but there is already a *R. Barclayi*; *R. borealis* (again a duplicated hybrid) Marshall (4081); *R. Drucei* (*can.* × *rubig.*), Northants; *R. latens* (*can.* × *mic.*), Surrey; *R. tomentilliformis* (*tom.*, var. *Borreri* × *rubig.*); Cheshire; *R. glaucoides* (*mollis* × *glauc.*), Cumberland; *R. Shoolbredi* (*mollis* × *omissa*, var. *suberecta*), Ross and Sutherland; and several varieties, including *R. tomentosa*, var. *Brittoni*, Surrey, Oxon, as well as *R. Pouzini* from Surrey. Miscellanea Bryologica, by H. N. Dixon, p. 228. *Arabis ciliata ?* in Wales, p. 236. C. E. Salmon holds that the *ciliata* of Irish botanists (*A. Brownii* Jord. Diagn. 123, 1864) does not occur in Wales, an opinion we had arrived at some years ago. He thinks the Tenby plant may be a Jordanian segregate of *hirsuta*. Notes of the Flora of the Varna District, Eastern Bulgaria, by W. B. Turrill, p. 238. Four Shropshire Aliens, by J. C. Melvill, p. 242—*Geranium Endressi*, *Lactuca macrophylla*, already recorded for that county in *Rep. B.E.C.*, *Torilis macrocarpa* Bess. and *Rudbeckia amplexicaulis* Vahl. Malayan Plants Suppl., by H. O. Forbes. Norfolk *Mycetozoa*, by H. J. Howard, p. 257. *Anemone nemorosa*, var. *caerulea*, by E. J. Salisbury, p. 265. *Statice* and *Limonium*, by T. A. Sprague, p. 267. We are glad to see that *Limonium* is applied to the Sea Lavenders and *Statice* to the Thrifts, thus supporting the view I have urged and used for many years. The Botanical Name of the Water-cress, by T. A. Sprague, p. 225. Here unfortunately Mr Sprague decides for *Nasturtium*, stating that *Radicula* was restored by Groves in 1904. As a matter of fact it did not need restoring, for Mönch had used it in 1794. The argument used by Schinz and Thellung, who at first adopted *Radicula* but afterwards rejected it on what I consider to be insufficient grounds, was that names of genera must be rejected when they are formed from a technical term borrowed from morphology, unless they are accompanied by specific names. *Radicula* was established by Dillenius (*Cat. Hort. Giss.*), but as Rendle and Britten point out *Radicula* is not borrowed from morphology. At the Brussels Conference, by special pleading and an alteration of the original art. 54, " Names of genera are to be rejected when they coincide with a technical term concurrently used in morphology, unless they are accompanied with specific names." Now, in the case of *Radicula*, specific names are present, so that the argument falls to the ground, since Mönch *Meth.* 262, 1794, in restoring Dillenius' genus, which had already been brought into post Linnean citation by Hill (*Brit. Herb.* 227, 1756), gives three species (not the Water Cress, which was united with it by Robert Brown) under *Radicula*. Obit of C. F. Nordstedt, by H. Groves, p. 289. Authorities for Corrected Names, by T. A. Sprague, p. 292. New Malayan Plants, by H. N. Ridley, p. 294. The Age and Composition of Pennine Peat, by T. W. Woodhead, p. 301. A "Quilled Dandelion," by F. E. Weiss, p. 304. James Britten Obituary, by A. B. Rendle, p. 337. The Botanical Name of the Quince, by T. A. Sprague, p. 343. The Harpidioid Hypna of Herefordshire, by E. Armitage, p. 344. La Gasca in England, by J. Britten and B. Daydon Jackson, p. 347. Biographical Notes, by J. Britten, p. 350.

KELLER, ROBERT. Ueber neue Arten der Gattung Hypericum. in Bot. Jahr. 190-9, 1923.

KNOCHE, HERMAN. FLORA BALEARICA : ETUDE PHYTOGRAPHIQUE. 8vo, vol. i., 534, 1921; ii., 585, 1922: iii., 411, 1923; iv., plates and maps and a thesis, 1923. L. Lhomme, 3 Rue Corneille, Paris; 300 francs.

KOORDERS, S. H. EXKURSIONSFLORA VON JAVA. Vierter Band. G. Fischer, Jena, 1924; 8 gold marks.

LANSDELL, Miss K. A. Weeds of South Africa, Rep. 45, 1923. In this bulletin six weeds are figured and described with suggestions for their eradication. They are *Cirsium* (*Cnicus*) *lanceolatum* (the authority wrongly attributed to Linneaus, who called it *Carduus*), the dodder *Cuscuta chinensis* Lam., *Acanthospermum hispidum* DC., *Centaurea Melitensis* L., and *Opuntia aurantiaca* Gilles.

Lewis, Francis J., and E. S. Dowding. The Anatomy of the Buds of Coniferae, in Annals of Botany xxxviii., 217, 1924.

Lindman, C. A. M. Poa. Scientific Results of the Norwegian Expedition to Novaya Zembla. 13. pp. 111-126, 1921. *Poa abbreviata*, *P. alpigina*, *P. alpina*, *P. arctica*. He considers *P. stricta* Lindeb. to be a hybrid of *alpina* × *laxa*.

Linnean Society of London. Secretary, B. Daydon Jackson; subscription, £4 yearly. Meetings, Exhibits. No. 425, Jan. 10. Mr A. J. Wilmott showed *Myosotis sicula* from Jersey, *Alchemilla pastoralis* from Teesdale, *A. glomerulans* from Inverness-shire, *Viola Juressi*, the *V. epipsila* of Greg.?, *Geranium purpureum*, var. *Forsteri*. No. 427, Feb. 7. Sex Conditions in *Silene nutans*, by E. J. Collins, B.Sc. No. 427, Feb. 7. Mr H. W. Pugsley exhibited what he proposed to call *Statice transwalliana* from Pembrokeshire. No. 431, April 3. The Occurrence and Distribution of *Festuca ovina* L., sens. ampl. in Britain, by Mr W. O. Howarth. No. 435, June 19. *Carex remota* × *divulsa* collected by Mr C. E. Salmon from Mayfield, Sussex, was shown. Mr T. B. Blow exhibited an extensive series of *Charophyta* from Madagascar which included several undescribed species. No. 439, Dec. 19. A remarkably cut leaved variety of *Pastinaca sativa* from Norton Common, Letchworth, Herts. Prof. W. C. M'Intosh was awarded the Linnean Medal. The Presidential Address was given on May 22, on the work of Linnaeus in Holland.

Long, Harold C., B.Sc. Plants Poisonous to Live Stock. Ed. 2., pp. vi., 120. Cambridge Agricultural Monographs. Camb. University Press, 1924; 8/6. The fact that a second edition of this work is produced is an evidence that it supplied a want and supplied it well. In the introduction useful hints are given, such as how to burn the trimmings of hedges and shrubberies, since they sometimes contain yew and other toxic leaves. The Poisonous Plants are arranged in the sequence of Bentham and Hooker's *Genera Plantarum*, and the various active toxic principles, so far as they have been ascertained, are given as well as the symptoms of poisonings which they cause. Examples of such poisonings are quoted. Among the Cruciferae the seeds of Charlock are said to be toxic on account of the presence of Volatile Oil of Mustard, great depression being one of the symptoms in horse-poisoning. The valid name for the plant *Brassica arvensis* is omitted. Cultivated Mustard—we are not told which species, *nigra* or *alba*—caused the death of 200 out of a flock of 221 sheep which in Norfolk were killed from being folded on it. The seeds of the Corn Cockle are said to be toxic, and stock fed on them rapidly lost weight and in some cases died. *Hypericum perforatum* has been found nocent abroad, but we have no evidence of its being harmful in England. *Laburnum*, the correct name of which according to the last decree is the tautonym *Laburnum Laburnum* (L.), contains a toxic alkaloid, Cytisine, and the same, or a similar body, is present in the Broom. The poisonous properties of the seeds of *Lathyrus sativus* and of the Java Bean *Phaseolus lunatus*, are described. *Cicuta* is one of our most dangerous plants, but, fortunately, in that sense it is local and a decreasing species. No allusion is made to the statement that at Duddingston, near Edinburgh, the plant is said not to be poisonous, but regarding *Conium* it is remarked that it is less toxic in the north. *Oenanthe crocata* is also very poisonous, its toxic property being chiefly due to a resinous principle, Oenanthotoxin. A few cases of sheep poisoning from Rhododendrons are cited. The genus *Azalea* is kept apart so that we have both *Rhododendron ponticum* and *Azalea pontica* given, but they are the same creature. The whole paragraph should be kept under *Rhododendron*. With regard to *Dulcamara*, the poison is said to be due to the glucoside Dulcamarin and to the alkaloid Solanine: he gives instances of its toxicity. Of my own knowledge one can substantiate it. But, like other poisonous plants, it seems to vary in toxicity from time to time. Also though at some times animals reject it, yet at others it offers a morbid attraction. I knew of an instance in this county where, although a valuable breed of sheep had for years inhabited a certain pasture, yet on one occasion, when the sheep were in parturition, day after day many died until I was asked to visit the place, when one saw that the sheep had gone down for shade to a dried-up water-ditch and had then freely eaten of the Bitter-sweet, which grew there abundantly. The removal to another pasture where no *Dulcamara* grew stopped the mischief, and there were no further deaths. Of *Atropa* he says a child died after eating three berries: the active principle is Atropine. A horse has eaten two pounds of Belladonna leaves, and I have seen rabbits eat them with impunity. The "capers" of *Euphorbia Lathyris* are said to have caused death in several instances. Even Acorns are said to be injurious, but how much of this is due to toxic principles, and how much to mechanical obstruction is open to doubt: so many records come in a most unscientific manner that it is difficult to arrive at the true facts in animal poisonings. The Yew is the only Coniferous plant likely to be seriously injurious in Britain: there are cases reported yearly of deaths of horses from eating the leaves, yet one continually sees horses browsing on them without ill effect. They seem to me more toxic when partly withered. The active principle is said to be Taxine. It seems difficult to associate the Horse-tails with cattle poisoning, yet both *Equisetum arvense* and *E. palustre* are charged with this offence. The latter I have known cause death to cattle at Rycote Park in Oxfordshire, but the question arises, is it not at least in part due to the indigestibility of the hard silicious stems? A chapter is devoted to the "Classification of Poisons," and there is a copious and excellent Bibliography. While the nomenclature is on the whole so excellent, one might suggest the use of *Sium erectum* instead of *S. angustifolium*, and to use capitals in the case of *Lauro-Cerasus*, *Scabiosa Succisa*, and *Ranunculus Lingua*. *Polygonum aviculare* and *Rhamnus catharticus* do not need them. *Equisetum heleocharis* is said not to be British, but it is so, being synonymous with our *E. limosum*. *Scilla bifolia* and *Crocus sativus*, p. 106, might be deleted from the British Plants and *Anemone* is *apennina*, not *appenina*; the authority for *Bryonia dioica* is Jacquin not Linnaeus: *Nepeta hederacea* is the valid name for Ground Ivy, and *Potentilla erecta* Hampe for the Tormentil; *Dryopteris Filix-mas* Schott is the more correct name for the Male Fern, but these are trifles which can be easily put right in the new edition, which we hope may soon be rendered necessary.

MARTINEAU, Mrs PHILIP. GARDENING IN SUNNY LANDS: The Riviera, California, Australia. With an introduction by Edith

Wharton. pp. 296, 17 plates and coloured frontispiece. R. Cobden-Sanderson, London, 1924; 15/-. A delightful present for the garden lover and the stay-at-home florist, since the bright pictures in it give him glimpses of another world in a pleasant and inexpensive manner. And to those whose travelling days are drawing near to a close what pleasant memories it brings as one looks at the picture of the stuccoed terrace adorned with pendulous roses such as one has often seen at Mentone, above the bays "the peacock's neck in hue," or the spacious sweep of the well-designed gardens of the Villa Rosmary, or the more informal garden of the Villa Sylvia, where the grey olives and sombre cypress spires offer a dignified foil to the purple *Iris*, bright *Prunus*, and stately tree-peonies. Another glorious sight is to be obtained at a Cap Martin garden which has an unusual feature in the Riviera of a clear stream of water running through. Mrs Martineau shows a delightful picture of a garden at Lake Como with the snow-topped hills beyond the lake and in the near foreground masses of Azaleas. Of all these and many more in various lands Mrs Martineau writes in an enthusiastic and charmingly discursive manner. And there are many useful hints which florists will value scattered through the pleasant pages or in the Lists given at the end, in which a large number of plants recommended for these sunny gardens are mentioned. But a strange slip has been made in calling the Bladder Senna *Corylus Avellana*, which is the common Hazel of our British Wood. It should have been *Colutea arborescens* L.

M'Crea, Mrs M. A. Supplement (1923) to Marquand's Flora of Guernsey and the Lesser Channel Islands, in Trans. Soc. Guernesiaise for 1923. A painstaking piece of work in which the various scattered records are brought up-to-date. As a matter of trifling importance, I found *Briza media* and took it to the late Mr Marquand.

M'Gill and Smith Research Annual. pp. 116, 1924; 5/-. Includes information on Formation of Permanent Pasture, Notes on Temporary Grasses, Native Plants for Pasture Making, Pastures, Plant Breeding, Oats, Potatoes.

Matthews, J. R. The Distribution of Certain Portions of the British Flora : ii., Plants Restricted to Scotland, England, and Wales, in Ann. Bot. xxxviii., p. 707-721, 1924. Of *Potamogeton falcatus* in France, one must not lay too much stress on the non-occurrence since it is a highly critical Pond-weed which is reduced by Hagström to a form of *nitens*.

MILLAIS, J. G. RHODODENDRONS AND THE VARIOUS HYBRIDS. pp. xii., 265, size 16 x 12 in., with 17 full-sized coloured plates by Miss Beatrice Parsons, Miss Winifred Walker, and Miss Lilian Snelling. 14 collotype plates, and 46 half-tone plates. Longmans, Green & Co., London, 1924. Second series. Ten guineas. In 1917 Horticulturists in general and Rhododendronologists in particular were rendered grateful by the publication of a sumptuous work by Mr Millais on this attractive genus, the execution of the work being admirably prepared by Mr Millais, the typography, paper and plates reflecting the greatest credit on its publishers, and eliciting a chorus of praise from the reviewers in a wide range of publications, some even rashly stating that the work had exhausted the subject. So far from that being the case, and one for which the author was in no way responsible, the production of the present volume is a sufficient answer. For the past ten years, by the exertions and researches of such travellers as Reginald Farrer, Capt. Kingdon Ward, and George Forrest, an immense number of plants have been discovered, especially in Western China, in the high altitudes of which country each separate valley seems to afford a different species. They are the *Hieracia* and *Rubi* of the west. In the *Genera Siphonogammarum* of 1900-7 Dalla Torre estimated the number of species as about 200, but according to Mr Millais they now number 670, a most astounding increase, and there are many others yet to come. Even allowing for many reductions we may safely estimate that over 800 species of this showy genus will be found, and these include not only tiny shrubs like the representatives on the Swiss Alps, but large forest trees exceeding 110 feet in height, while their beauty in their native home cannot be imagined. Once I asked Sir Joseph Horker what was the greatest display of flower-colouring he had ever seen, and he replied without doubt it was the Rhododendrons of Sikhim. Students of the genus were fortunate in enlisting the services of two such eminent botanists and cultivators as Prof. I. Bayley Balfour and his successor, Prof. W. Wright Smith, for to their indefatigable energy the cultivation, the naming and description of a very large number of the new species are due. In the first volume Mr Millais had the assistance of Mr Hutchinson of Kew in the preparation of a key for the species. This clavis is absent from the present work, which, dealing for the greater part with newly described species, will be none the worse for delay in its execution. In the general treatment of these species, the increased popularity of which is in a great part due to the production of the first volume, there is the same general standard of excellence. But, of course, the last word has not been said as to the species themselves or even perhaps on their identifications, but the writer has done justice to the mass of material at his disposal, the magnitude indeed of which was not the least difficulty in its preparation. As in the last series the publishers have done their share in a splendid manner. The illustrations are most charming whether they are from the delightful paintings of the three talented lady artists, which are vividly reproduced, or in the collotype plates, in which the effects of colour are almost given, so well are they printed, and then there are the lavish half-tone blocks which adorn page after page of this sumptuous work—the production of which must have been exceedingly costly and can scarcely repay either publisher or author for the expense incurred. One may add that the illustrations include some photographs taken by Mr Forrest on the Chinese hills and these add another interest to the book. The work is prefaced by a practical chapter on "Modern Shrub Gardening." The second chapter is devoted to the Chinese explorations by the three collectors already referred to, and the author is fortunate in obtaining from Forrest and Kingdon Ward descriptions from their own pen of their adventurous journeys. Mr Euan Cox gives some details of Farrer's last expedition. Another chapter is devoted to the New Hybrids, of which some examples are beautifully figured. One of the most striking is *R. Loderi*, a cross of *Fortunei* and *Griffithianum*: it flowered in the sixth year, some of the blossoms being actually seven inches across. The species and hybrids are arranged in alphabetical order, references being given to those described in the first volume, but we notice many (twenty) species which are included in the *Index Kewensis* and its first Supplement not including those in the other Supplements. This brings the total number already described to 700 species—therefore one of the largest genera known It would have been well to give all that are published. One of the last illustrations is that appropriately of *zeylanicum*, of which a noble example is shown growing near Newara Elya in Ceylon, where once in company with Lord Meath and Dr Longstaffe we saw some splendid examples flowering. We hope sincerely that the edition of 550 copies will soon be exhausted, so that author and publishers may not be the losers by their enterprise.

MILLSPAUGH, CHARLES F., and LAWRENCE W. NUTTALL. FLORA OF SANTA CATALINA ISLAND, CALIFORNIA, in Field Mus. Nat. Hist. Bot. Vol. 5, pp. 413, tt. 14, 1923. Includes 882 species and 459 genera in an area 22 miles long and $\frac{3}{8}$ of a mile wide.

MISCELLANEOUS INFORMATION, BULLETIN OF. Royal Botanic Garden, Kew. The ten numbers of this very cheap Government publication as usual teem with important matters relating to Botany. Four hundred pages are supplied at a cost to the purchaser of 8/4, which even beats our 414 pages for 10/-, but, alas, we have not the public purse to draw upon. Mr Sprague is well to the fore and, in conjunction with L. A. M. Riley, begins a most useful Flora of British Honduras—where the mahogany comes from. The colony is slightly larger than Wales, twice the size of Jamaica, and four times the size of Trinidad; the highest hill is Victoria Peak, 3700 feet above sea level. About 800 species are known, but it is expected that the total number will be nearly 4000 species. The Flora is not arranged according to Engler's *Pflanzenreich*. Mr Sprague also gives the Mexican Itinerary of Humboldt and Bonpland. Mr J. Hutchinson gives his third paper on Contributions towards a Philogenetic Classification of Flowering Plants. Mr W. H. Pearson's posthumous Notes on Tasmanian Hepatics. Mr W. G. Craib gives contributions to the Flora of Siam, with many new species. Mr L. A. M. Riley gives The Mexican and Central American species of *Ouratea*, with a key. No. 4 contains a note on a New National Pinetum, from which it appears that 50 acres have been acquired at Bedgebury, about ten miles east of Tunbridge Wells, for that purpose. There are many trees already growing there, including a fine specimen of *Abies grandis*, 100 feet high. The area acquired may be indefinitely extended; already over three hundred plants have been sent from the Kew nurseries. The committee to arrange the laying out of the planting contains, we are glad to see, the names of Sir John Stirling-Maxwell, Mr W. J. Bean, and Dr A. W. Hill, but the general management is in the hands of the Forestry Commission. Mr J. Hutchinson gives a most valuable article on " Contribution towards a Phylogenetic Classification of Flowering Plants," no. iv., which is a proposed re-arrangement of Families comprising the Archichlamydeae. On p. 136, Mr W. B. Turrill gives an account of " The Formation of a Seed Collection," which now comprises about 5300 samples. On p. 137, S. Garabedian gives " A Revision of *Emilia*," with a key to the species on p. 146. Mr D. Thoday gives " A Revision of the 15 Species of *Passerina*." On p. 178, Dr W. Robyns of Louvain University gives " A Revision of *Sphaeranthus*," which has 38 species. Ten new species of Exotic Orchids are described on p. 199. Mr L. A. M. Riley continues his Flora of Sinaloa, and on p. 223 Dr J. Burtt Davy describes New or Noteworthy South African Plants. Our Editor of the last *Report* of the B.E.C., Mr C. V. B. Marquand (p. 241), contributes " A Revision of the genus *Cyananthus*;" 21 species from the Himalayas and China are described, including five new species and many varieties. An account of Ancient Cotton Fabrics is reprinted from *Sudan Notes and Records* for Dec. 1923 from the pen of Mr R. E. Maney. He gives the earliest historical reference to Cotton as Herodotus, 450 B.C., who in giving an account of the invasion of India by Darius, 521 B.C., alludes to trees which grow there, " the fruit whereof is a wool exceeding in beauty and goodness that of sheep." Theophrastus more precisely localises the Cotton in the Isle of Bahrein in the Persian Gulf and well describes it, and there are many other references given. The Plants of Patos, a small island between Trinidad and Venezuela, are given on p. 253 by Mr R. O. Williams. On p. 287, Mr W. B. Turrill begins an important paper on the Flora of the Gallipoli Peninsula, enumerating 472 species. It is continued on pp. 305-331, 337-363, 369-383. On p. 331 Mr L. A. Boodle gives an account of Mistletoe on Oaks, in which he mentions the curious fact that *Viscum album* is sometimes found parasitic on *Loranthus europaeus*, itself a parasite, and this is accountable for erroneous records of Mistletoe on oaks in South-East

Europe. Of course this does not affect British records, because *Loranthus* does not occur with us.

Miyoshi, Dr Manuba. Plates of Japanese Iris. Vol. i.-iv., tt. 105. Wheldon & Wesley, London; £5 10/-. The author has succeeded in obtaining 222 new varieties of *Iris laevigata*, 100 of which are beautifully figured.

Moreux, L'Abbe Th. Pour Reconnaitre les Fleurs. 2 vols., pp. 212, tt. 150. Gaston Doin, Paris, 1924; 8 frs.

Murbeck, Svante. Species Nonnallae novae maroccanae, in Bot. Notiser i., 269, 1922; ii., 60, 1923.

Murr, Dr Josef. Neue Uebersicht uber die Farn und Bluten-flanzen von Voralberg und Liechtenstein. No. 3, Bregenz, 1924. Verbenaceae. Among other changes in names *Mulgedium* appears as *Cicerbita alpina* and with it is *Lactuca muralis* as *C. muralis* Wallr., thus following Beauverd. A very large number of *Hieracia* are described, and he has subsequently described a new hybrid, *Crepis biennis* × *capillaris* = *C. Drucei*.

Nabelek, Dr Fr. Iter Turcico-Persicum. Pt. i.: Pl. Coll. Enum. Ranunculaceae-Dipsacaceae. Pub. de la Fac. des Sciences. Univerité Masaryk, 1923. Plants collected in Palestine, Mesopotamia, Kurdistan, and Armenia.

National Trust, 25 Victoria St., Westminster. Report 1923-4. Frontispiece shows view from Scafell Pikes looking north over the area vested in the Trust. Among other properties recently acquired are the Roman Villa, Chedworth, with seven acres of ground. Annual subscription, 10/- and upwards.

The Naturalist. Brown & Son, London; 10/6 prepaid, 1923; 15/-, 1924. Edited by T. Shepherd, M.Sc., etc., and T. W. Woodhead, Ph.D., etc. Botanical Survey and Ecology in Yorkshire, by T. W. Woodhead, 97-128, 1923. John Ingham: a Memoir, 238-9. His Mosses go to Leeds University. Yorkshire Naturalists at Pennystone, by W. H. Pearsall, D.Sc., and T. A. Mason, 340; ditto at Bedale, 378. *Asplenium Trichomanes* at Greenfield, by F. J, Stubbs. West Yorkshire Botanical Notes, 48, 1924. Recolonisation of woodland flora after burning by W. G. Town, 169. Further Notes upon the Vascular Plants characteristic of Peat, Mildred Hinchcliffe and J. H. Priestley, 201. Yorkshire Naturalists at Ravenscar, by W. H. Pearsall, D.Sc., and T. A. Mason, 272-8; ditto at Teesdale, 346. Robert Kidston: a memoir and portrait, 364-6.

NATURE. Weekly 1/-. Edited by Sir Richard Gregory. Contains, as usual, an immense amount of most valuable material. We may note among others the addresses of Professor Bateson on Progress in Biology, given in connection with the centenary of the Birkbeck College; on Problems of Muscular Receptivity, by Sir Charles Sherrington, P.R.S., O.M., G.B.E.; the Plant Commonwealth and its Mode of Government, by Sir F. Keeble, C.B.E., F.R.S., a discourse delivered at the Royal Institution on March 21, which we wish space allowed us to reprint. Insects and Flowers, by Dr E. J. Salisbury. A very able paper on this subject will be found on p. 92, 1924, for July. Excellent reports are given of the meetings of the Imperial Botanical Congress held in London under the Presidency of Sir David Prain, May 28-31, and of the Edinburgh Conference on the Vegetative Propagation of Plants held in that city on July 17 and 18 under the auspices of the Botanical Society of Edinburgh. The meetings were held by permission of the Regius Professor, W. W. Smith, in the Royal Botanic Gardens, which are so well maintained under his careful management. A report is also given of the meeting of the South African Association for the Advancement of Science, held at Cape Town, July 7-12, under the Presidency of Prof. J. A. Wilkinson.

NEW PHYTOLOGIST. Edited by A. G. Tansley; 25/- per annum. A Fuerteventura Diary, by R. L. Praeger, p. 216. Note on the Periodicity of Leaf Form in *Taraxacum officinale*, by B. M. Griffiths; 14 text fig.: 153 specimens gathered in the grounds of University College, Reading. Unfortunately the particular plant experimented with was not submitted to Herr Dahlstedt, nor was the *T. erythrospermum* critically identified. The latter came true to type, and there was no change in leaf form as in the *officinale*. It is a pity that the obsolete varietal names are used. The conclusions drawn from these experiments appear to be premature, and not of great value.

Nicholson, W. A. Fauna and Flora of Norfolk, in Trans. Norf. and Norwich Nat. Soc. xi., pt. 5, p. 601, 1923-4.

Nuttall, G. Clarke. Trees and how they Grow. 8vo, pp. xi., 184, tt. 70. Cassell & Co., 192; 7/6.

Oppenheim, Bertha. Winged Seeds 8vo, pp. x., 242, tt. 8. Macmillan & Co., London, 1923; 12/-.

Ostenfeld, Prof. C. H. Floriste Meddelelser Smaa Bridragtil om Danske Flora viii. *Iris Pseudacorus* L., var. *pallidiflava* Sims Bot. Mag. 2239, 1821, precedes *I. Bastardi*. *Agrimonia Eupatoria*, var. *ochroleuca* Ostf. (petalis staminisque pallidis fere albescentibus) which I have seen in Britain. Gives a description of five species of *Amsinkia—Douglasiana*, *arenaria*, *lycopsioides*, *intermedia*, and *Menziesii*. Also *Odontitis rubra*, var. *serotina* Reichb., sub-var., *pallida* Lange=*O. rubra*, var. *pallida* Lange—which is British. Plants from Beata Island, St Domingo, in Dansk. Bot. Arkiv, band 4, n. 7, 1924. *Plumeria Ostenfeldii* Wib. is described, a small white-flowered tree from the rocky plateau. Also a new genus of Malvaceae—*Ullrichia* Urban was found, and *U. beatensis*, a conspicuous white-flowered species, is described.

Parkin, J. Stomata and Phylogeny, in Ann. Bot. xxxviii., Oct. 1924. The Strobilus Theory of Angiospermous Descent, in Proc. Linn. Soc., p. 51-64, 1924.

Piper, C. V., and W. J. Morse. The Soy Bean. pp. xi., 329, 1923. M'Graw-Hill Publ. Co., London; 20/-.

Rayner, John F. Alien or Adventive Flora of Hampshire and the Isle of Wight, in Proc. Isle of Wight Nat. Hist. Soc. for 1923. County Press, Newport. pp. 166-175; 1/6. The next part will contain a List of the Aliens.

Rechinger, Karl. Studien uber dies Gattung *Rumex*, in Ann. Nat. Mus. Wien, 152-9, 1923. *Rumex curvatus* is new and there are several new hybrids.

RIDLEY, HENRY N., F.R.S. THE FLORA OF THE MALAY PENINSULA. Demy 8vo, in five volumes. Vol. iii. : Apetalae. pp. xvi., 406, 1924. L. Reeve & Co.; 16/-.

RIGG, GEORGE B., Ph.D. THE PHARMACISTS' BOTANY. pp. xviii., 318, with many text figures. The Macmillan Company, New York, 1924. Professor Rigg of the University of Washington, who has been teaching pharmacy students for fourteen years, here gives the outgrowth of his experience and his methods of teaching a subject which is important to the pharmacist as no fewer than three hundred official drugs are obtained from plants. But he has given a wider outlook than that of mere pharmacy, and has therefore included terse accounts of Plant Organs, the Plant Cell, Leaves and Stems, Buds, Roots, Flowers, Seeds, Fruits, as well as Physiological Processes, the Life Histories of Seed Plants and their Classification, brief accounts of Spore Plants, Ecology, Propagation and Plant Breeding, and Genetics, so that the work is one not only suitable to the pharmacist but useful to the medical practitioner who wishes to have a general knowledge of Vegetable Pharmacology. There is an interesting chapter on Botanical Plant Names, and we are glad to see that he has followed the practice of the United States Pharmacopœia in using capitals for the specific names of plants which have been used in a generic sense or are derived from the names of persons. Therefore, such names as *Rhamnus Purshiana* and *Daphne Mezereum* are given, although the latter is by a typographical error written *Mezerium*. One, however, does not like the triple names such as *Prunus Amygdalus dulcis* to express a variety. Our English method of writing *P. Amygdalus*, var. *dulcis*, seems preferable. The date of the consistent use of binomials might have been more precisely stated in the first edition of the *Species Plantarum* of 1753 and not " about 1750." Accidental binomials had been used previously to that date: it was Linnaeus who first used them throughout. The text figures are extremely well executed and well chosen, and the photograph of Belladonna root is excellent. We notice the older name, *Castalia*, is used in the sense of *Nymphaea*, which latter is necessarily restricted to the yellow water lilies. The chapter on Thallotypes is full of practical information put in plain and easy language not overloaded with technical terms. The merits of *Sphagnum* as a wound dressing are well explained: in the United States *S. palustre*, *S. papillosum*, *S. imbricatum*, and *S. magellanicum* are the species chiefly used. The factors influencing plant life are also most clearly described. In an Appendix are given the Botanical Synonyms of Common Names used in the text. In the States hemlock signifies a species of *Tsuga*—the murmuring pines and the hemlocks—not as with us the Socratian poison, if indeed Xantippe ever used such a weak toxic agent as *Conium* to remove her too philosophic husband. British Pharmaceutical Students will find much of value in this compact, well written, well printed and excellently illustrated work.

ROBSON, FORSTER. THE FLOWER SEEKER. A Simple Guide to the Identification of Wild Flowers. pp. viii., 184, tt. 16, and many text illustrations. Cassell & Co., London, 1924; 3/6. This is arranged on novel lines, which may be helpful to beginners. Here is an example given, "The flower is found by the way-side, on a bank or by a hedgerow, in spring. It is blue. In the list will be found that opposite blue there are three flowers. The flower has four petals—but all three have four petals. The flower under observation has a white centre. The list gives Germander Speedwell as a blue flower with a white centre." But suppose *Veronica Tournefortii* grew there, are the distinctions sufficient? The text gives some useful descriptions, but the essential characters of *Sonchus asper* and *oleraceus* are not specified. The plates are good representations of the plants. Many of the scientific names given are obsolete, and the use of capitals for specific names, though somewhat eccentric, is better than one often sees. There is no reason to include *Echinophora*, which, if it ever occurred, has long been extinct, especially as only two Orchids are included. The little volume is handy for the pocket and would be an acceptable gift to one who is commencing the delightful study of out-door botany.

RONNIGER, KARL. Beitrage zur Kenntnis der Gattung Thymus (1) Die Britischen Arten und Formen Sond. aus Fedde Reperts. xx., 321. 332, 1924. This is practically a reprint in German of the article on Thymus in our last *Report*. *T. praecox* Opiz, sub-sp. *filicaulis* Ronn. et Bornm., Thuringia, *l.c.* 66, 1924.

ROYAL HORTICULTURAL SOCIETY, Vincent Square, Westminster.

Annual subscription, £1 1/-; entrance fee, £1 1/-. The Library now contains over 10,000 volumes. The *Botanical Magazine* is now published by them at £3 3/- a volume.

Russell, Sir E. J., F.R.S. Present-day Problems in Crop Production, in Nature ii., 434, 1924.

Rydberg, P. A. Flora of the Rocky Mountains and adjacent Plains. Ed. 2, pp. 137-200, 1923; tt. xii., 1144. Published by the author, New York, 1922. Has 139 additional species.

Santos, Jose K. Determination of Sex in *Elodea*, in Botan. Gazette lxxvii., 353-376, 1924. The experiments were carried out from material collected in Wolf Lake, about 14 miles from Chicago, where of course both sexes are present.

Salisbury, E. J., D.Sc. The Effects of Coppicing as Illustrated by the Woods of Hertfordshire, being the Anniversary Address to the Hertfordshire Natural History Society (Trans. Herts N. H. Soc. xviii., 1924). Some Impressions of the International Phytogeographical Excursion in Switzerland in 1923 in Journal of Ecology, January 1925. *Galinsoga parviflora* was a common wayside plant on the Italian side of the frontier. The Influence of Earthworms on Soil Reaction and the Stratification of Undisturbed Soils in Linn. Soc. Journ., Nov. 1924, 415-425.

Salisbury, E. J., D.Sc. Changes in the Hertfordshire Flora, being his Presidential Address delivered at Watford, March 26, 1924 (Trans. Herts N. H. Soc. xviii., 1924). Regarding the occurrence of Box on the Herts border near Ellesborough, Bucks. Dr Salisbury states, on the authority of Kalm (visit to England in 1745), that when at Gaddesden in 1748 he was told the Duke of Bridgwater planted the Box there in some quantity as the wood was in demand by the London blockmakers. This does away with the idea that it is a native of the Chiltern area. He treats of the increasing frequency of several species and his observations coincide with those of my own for Buckinghamshire. There is a much longer list of diminishing species and 21 are probably extinct from the drying up of marshes. But indiscriminate picking has been one of the contribute effects in the diminution of many heathland plants. The paper should be read by every field-worker, for it teems with suggestive points.

SHANTZ, H. L. and R. L. PEIMEISEL. Indicator Significance of the Natural Vegetation of the South-Western Desert Region in Journ. Agric. Research, xxviii., n. 8, pp. 721-801, tt. 14, May 24, 1924, Washington. A valuable and thorough piece of investigation of a curious and interesting area. We notice with pleasure that *Dondia* is used in place of *Suaeda*.

SHENSTONE, J. C., F.L.S. The Vitality and Distribution of Seeds, in Journ. Bot. 297, 1923. Although special reference is made of the occurrence of *Sisymbrium Irio* in London after the great fire, and to its appearance in the Oxford Botanical Garden in a fresh place after ashes had been dug in, yet he has not noticed the records in our pages of its appearance in Marston brickyards, with other garden plants. There it keeps fairly constant. I have it in my garden, and seedlings come up in gardens far removed—conveyed by birds or wind. As regards the Aldwych site referred to, we cannot place much stress upon plant occurrences there, for I know a misguided enthusiast who scattered large quantities of seeds there and elsewhere. At present so many records of abnormal occurrences rest on unscientific investigation. In the cases of oily seeds their popularly believed longevity may actually be the case. The influence of winds is, I believe, underrated. I saw *Senecio squalidus* on the top of Dudley Castle; either wind or birds must have conveyed it there.

SKENE, MACGREGOR. THE BIOLOGY OF FLOWERING PLANTS. 8vo. pp. xi., 523, tt. 8. Sidgwick and Jackson. London, 1924; 16/-.

SMITH, GILBERT M., J. B. OVERTON, E. M. GILBERT, R. H. DENNISTON, G. S. BRYAN, and C. E. ALLEN. A TEXT BOOK OF GENERAL BOTANY. pp. x., 409. Macmillan & Co., London, 1924; 16/-.

SMITH, J. E. FERNS AND HOW TO GROW THEM. pp. 66. Simpkin, Marshall & Co., London, 1923; 6/6.

SOCIETY FOR THE PROMOTION OF NATURE RESERVES. Handbook, 1924. Natural History Museum, London, S.W. 7. The Society has lost by death Mr Ogilvy Grant and the Hon. G. S. Montagu, who were members of the executive.

SPENCE, LEWIS. THE PROBLEM OF ATLANTIS. W. Rider & Sons, 1924; 10/6 net. In this interesting book Mr Lewis Spence undertakes to show that Plato's well-known story, derived from Egyptian priests, of the former existence, to the West of Europe, of a large continent known as Atlantis and still remaining within the human period, perhaps not more than 9000 or 10,000 years ago, is probably a true tradition. He gives us Geological, Biological, Prehistoric evidence and brings many traditions, old and various, from Egypt, Central America and other parts of the world to support the truth of the story. To us in this report the interesting part is the evidence given by plants. He quotes M. Gattefosse, of Lyons, "who has made a special study of the question," as saying that " The Canaries, Azores and Madeira have an existing Flora comparable with that of Western Europe in Tertiary times, which Flora has undergone a special and localised evolution and has explicit relations with American Flora." Thus for example some species of Orchids " flourish only in the Canaries, Madeira and America." This, Mr Spence thinks, means that the centre of its origin or dispersion was the lost Atlantis continent, from which it spread East and West or remained on the islands which were once the mountain tops. The evidence of the Flora seems somewhat scanty, but it should be added that the evidence from the Fauna of Central America and Europe is far more convincing. Whether the sceptics will think that Mr Spence has *proved* his case or not he has certainly shown the possibility, perhaps the probability, of the former existence of Atlantis and he will at least convince every unbiassed reader that " No good reason can be found why it should *not* have existed."

F. BENNETT.

STEVENS, WILLIAM CHASE. PLANT ANATOMY from the Standpoint of the Development and Functions of the Tissues and Handbook of Micro-Technik. 4th edit., pp. xv., 398. J. & A. Churchill, London, 1924; 18/-.

Stomps, Th. J. Rhine Plants and Mollusca in Eastern England, in Tids. Tijdschrift Kon. Nederl. Aard. Genoot, Nov. 1923. Of these he says that among others *Muscari racemosum*, *Ornithogalum umbellatum*, *Eryngium campestre*, *Scleranthus perennis*, are confined or nearly confined to the Breckland of Norfolk and Suffolk. This is not quite accurate. *Muscari* is native in Oxon on the limestone, as is the *Ornithogalum*, which also occurs on the Chalk; *Eryngium* is known in Hampshire and Devon, while there is an outlier of the *Scleranthus* in Radnor.

Tahourdin, C. B. Some Notes as to British Orchids, 1924. One is sorry to see the statement, which can only increase confusion, that *O. maculata* was "recently called *O. Fuchsii*," and that *O. elodes* was "recently called *ericetorum*." If botanical descriptions mean anything, *O. maculata* = *ericetorum*, *praecox*, and *elodes*, and *O. Fuchsii* = *O. maculata* Godfery, non L. The statement that there has been no record of *O. hircina* for Surrey for about 70 years is incorrect. If our pages are consulted a recent one will be found. We regret also to see some other names used, *i.e.*, *Epipactis violacea* should be *E. purpurata*, or rather *Helloborine purpurata*, and *E. atrorubens* is given instead of *H. atropurpurea*. The reference to *Epipogon aphyllum* "Journ. Bot." should read *E. Epipogium* Druce in Gard. Chron. 1924 (whence the note in *Journ. Bot.* was culled).

Tansley, A. G. The Unification of Pure Botany, in Nature 85, 1924.

Tansley, A. G. History of the Scots Pine in England, in Proc. Birmingham Nat. Hist. & Phil. Soc. 15, Supp. 1923. See Journ. Ecol. ii., 128, 1923.

Thellung, Albert. Uber Einige Kritische Heracleum, in Sippen der Alpen Osterr. Bot. Zeit. 200-13, 1924. *Levisticum officinale* Koch Verh. Nat. Gesel. in Basel xxxv., 29, 1923. Weitere Beitrage zur Nomenklatur der Schweizerflora (viii.), in Viert. der Naturf. Zurich, pp. 457, 1923, replaces *Sparganium affine* Schniz., 1845, by *S. angustifolium* Michx. Fl. Bor. Am. 189, 1803. Uses *Agrostis palustris* Huds. vice *A. alba* L., *Mariscus serratus* Gilib. vice *C. Mariscus*, but why not *Mariscus Mariscus*? Retains *Polygonum mite* Schrank. The arguments for the use of *P. dubium* instead of

P. mite are considered. *Arabis albida* Stev. nom. nud. is replaced by *A. caucasica* Willd. En. Hort. Berol. Supp. 45, 1813; *Cynoglossum germanicum* Jacq. is adopted instead of *C. montanum* Lam.; *Myosotis alpestris* Schmidt instead of *M. pyrenaica* Pourr., and *Mentha niliaca* (Juss.) Jacq. Hort. Vindob. iii., 46, 1776, instead of *M. villosa* Huds. of 1778.

THOMPSON, R. CAMPBELL, M.A., F.S.A. THE ASSYRIAN HERBAL: A Monograph on the Assyrian Vegetable Drugs. pp. 294 (stencils), Luzac & Co., London, 1924. This erudite publication gives an account of about 250 kinds of Vegetable Drugs which are mentioned in cuneiform plant-lists in the Bodleian Library and other sources. It proves that the early Assyrian was well acquainted with the properties of not only vegetable but mineral medicinal substances. It shows, too, that 250 drugs are mentioned 4,400 times, that 120 mineral substances are referred to on 650 occasions, and that 180 drugs are not yet identified. The Assyrian had a methodical arrangement of the Drugs. He begins with Grasses, follows with Rushes and the Euphorbiaceae, but owing to the prefix "Hul" the Cucurbitaceae and the Papaveraceae are grouped together, while the Compositae are indiscriminately scattered. This, the author says, is entirely in keeping with what is known of the Assyrian method but it evinces, as the subject is more closely studied, that the doctors and chemists of Nineveh had a great knowledge of the subject. He thinks that many of these Assyrian plant-names have found their way, doubtless through merchants, into the Western languages, and of these he gives examples. The much debated "Silphium," he suggests is the *Laserpitium* from the Assyrian "Laserbitu," and that Myrrh is derived from "Murru." The Assyrians described Colocynth apple as "like a ball," the opium poppy as "like Mandragora," and women and children gathered its juice. *Hyoscyamus* is a "heart-plant" which was used for many complaints, and there is a poem about it extant. Unfortunately space prevents the detailed criticism which such a work as this demands.

THONE, FRANK E. A. TREES AND FLOWERS OF YELLOWSTONE NATIONAL PARK. pp. 70, tt. 8. J. D. Haynes, St Paul, Minnesota, 1923.

Thurston, Edgar, C.I.E., and C. C. Vigurs. Note on the Cornish Flora. Adds, *inter alia*, *Physalis Fendleri* (adv.).

Todd, James A. Plant Studies. Cr. 8vo, pp. 151. A. Baxendine & Sons, Edinburgh, 1924; 2/6.

Townsend, Charles Wendell. Beach Grass. pp. xii., 319, tt. 82. Marshall, Jones Co., Boston, U.S.A., 1923; 3½ dollars. This charming and beautifully printed volume, with its excellent plates, was written by Dr Townsend, the author of "Sand Dunes and Salt Marshes," as an intimate study of a sandy seashore region. It is written in an informal anecdotal style for the general reader of simple out-door tastes, the author's knowledge assuring the accuracy of his observations. "The fox and deer, the muskrat and rabbit, the crow and skunk, herring gull and white-footed mouse, these and other inhabitants and frequenters of the dunes, are the principal characters in a sea-side drama enacted in a sandy setting of beach grass, willow and golden rod. The action does not take place in summer alone, and fully as interesting is the winter season, with its frozen estuaries, surf-battered ice walls, frost-rime and frozen sand columns." The beach grass which gives the book its name is our own Marram, *Ammophila arenaria*. Byron's well-known lines are quoted as a prelude: "There is a rapture on the lonely shore, there is society where none intrudes." He shows this to be the case in his eloquent descriptions of the things he sees there. There is the ever-shifting dune with that purity of outline rippled with the waves of wind which cause its movement, there are fixed dunes, helped to become stationary by the Marram Grass, and then there are what the author calls irregular dunes, which look like snow-covered mountain tops. He tells us of coast erosion, of the extension of the pine trees, of new arrivals, and of Cranberry bogs, and he rightly hopes that no misguided enthusiast will begin planting foreign shrubs or trees to disturb the natural flora of the dunes, and thus destroy the harmony. In this delightful manner the author leads us along in his explorations, and if ever the way seems long he introduces a graceful and vivid photograph to charm us on the journey. One of the most interesting ingredients in the dune flora is the Dusty Miller, *Artemisia Stelleriana*, a Kamscatkan plant which is thoroughly naturalised on the North Bull near Dublin, at Marazion in Cornwall, and of which I found a single example at Lunan Bay in Forfarshire. On the North American dunes it is luxuriant, as the beautiful photograph shows. He tells us that mirages are not unfrequent, and often of singular beauty. His description of a night under the stars makes one long to enjoy the experience. He shows a photograph with a moonlight exposure of twenty minutes, which gives the impression of a cloud upon a mountain side, but it is only the mist sweeping over the dunes. Alas, one sometimes suffers for these poetic wanderings. There are not only the notes of the birds, but also the ping of the mosquitoes—and they take their fill. It is pleasant to know that the Audobon Society's exertions to prevent the destruction of egrets are bearing fruit, and that they are now increasing. Here, too, the great Snowy Owls come as visitors; they are gluttonous eaters, and the list of the contents of their pellets is a revelation of omnivorous feeding. No fewer than thirteen different kinds of birds and four species of mammals were identified in the debris round their nest. "Tracks in the sand" affords most pleasant reading. So, too, do the chapters on the dunes in winter, with the wonderful effects of snow and ice, the frozen seas, and the driven snow, described as they are by a master hand. When one is in a cosy room before a blazing coal fire, one complacently endures, in imagination, a temperature below zero, and one might be inclined to ask oneself—but quite sure that consent would not be given—to "Give me to struggle with weather and wind; give me to stride through the snow," which is not for us septuagenarians. Then there is the glory of the winter sky when Aurora comes with its ever-shifting phases of form and colour, the "dance of the spirits," as the Cree Indians call it. Very delightful, too, are the chapters on "Hawking" and the "Courtship of Birds," a subject on which Julian Huxley has a great deal to say. The reading of the "Beach Grass" has been a real pleasure, and one lays down the book with a sigh of regret at wasted opportunities, or the impossibility of grasping them.

Trail, James William Helenus A Memorial Volume. Demy 8vo, pp. vii., 331. The Aberdeen University Press, Upper Kirkgate, Aberdeen, 1923; 7/6. On the fifth of May 1920, a committee was formed in order to raise funds for the creation of a memorial and on the 29th of March 1922 it was decided to have a mural portrait plaque placed in the New Department of Botany and that a memorial volume containing unpublished work of Professor Trail should be issued. We have already drawn attention to the plaque portrait, which was executed by Miss Alice B. Woodward. The head of Professor Trail is surrounded by a wreath of oak leaves, acorns and galls, the galls of Scotland having formed his favourite object of study, the results of which were published in the *Annals of Scottish Natural History*. of the Botanical portion of which work for some years he was a most efficient editor. The decorative panel presents a dragonfly and a water-spider, representative of his zoological interests; and a bladder-wort indicative of his work at the Scottish flora. The two Brazilian palms have reference to his early papers, after his return from his scientific visit to the Amazon. The second object of the Memorial is in this volume, which is a "Flora of the City Parish of Aberdeen," on which he had spent many years of investigation. It may at once be said that in the execution of this memorial volume its preparers and editors have exercised a wise discretion and have most admirably carried out the task entrusted to them. His friends will especially be very glad to have included the Biographical Sketch based upon a fragment of his Autobiography, which by the permission of the University Library, to which body many of his MSS. were bequeathed, has been allowed to be used. The words of the inscription of the Memorial Tablet are :—"He knew and loved the realm of living nature and inspired successive generations of students with his desire for deeper knowledge." The volume also contains an excellent portrait of Trail taken in 1903. Here one may say that he had prepared a MSS. volume or volumes in which the comital distribution of plants through Scotland was clearly shown. It seems desirable that in some form this should be published, as though for the greater part it appeared in the *Annals of Scottish Natural History*, it was a series of articles and is therefore not easy to consult. This would probably contain additional material to his Reprint from the *Annals* (see *Mem.*, p. 49). In the autobiography referred to there are some pleasing incidents. Trail and a companion walked through the rain from Thurso to Melvich, where, drenched to the skin, they were told at the only inn "there was no room," and were advised to go to Betty Hill—that hospitable lady whose charms are in every visitors' mouth—but, alas, it was miles beyond. They refused to budge and were shown a room "not good enough for gentlefolk," but which contained two beds, a fireplace, and a table. Here, having had a fire lighted, they undressed in order to dry their clothes, enjoyed a good meal dressed in blankets, liked the place so much that they stayed another night, and when the bill for the two was produced, the total was four shillings which, said the servant, included tips. The Chronological Biography beginning with 1868 occupies 25 pages. The Flora proper begins with a chapter devoted to Changes in Topography, and a good account of the Alien Flora. It may be noted that he recorded several of them for the first time in Britain. The Flora proper contains 228 pages, in which the type clearly shows the native as opposed to the adventive species. The work of the older writers is carefully given. Is not *Helianthus argyrophyllus* a misprint for *H. argophyllus*, a Texas plant? Under the species will be found some valuable notes. The whole volume is a very happy tribute to a real flower-lover and to a genuine student, and especially to be valued since it was the last work of the last of the Professorial Systematists.

Transeau, E. N. General Botany. 8vo, pp. 560. G. G. Harrap & Co., London, 1924; 8/6.

U.S. Department of Agriculture Bureau of Plant Industry. Washington, 1924. The marvellous output of publications still pursues its wonted energetic course. The Inventory of Seeds and Plants Imported now numbers up to Dec. 1, 1922, 55,569-56,144. As is customary some most valuable notes are given, and the Introductory Statement by David Fairchild epitomises much of this. In noticing Captain Kingdon Ward's "Romance of Plant Hunters" reference was made to the Likiang Snow Ranges. Mr Rock, another of those adventurous beings, employed by the States, brought back *Lilium sutchuenense* and other ornamental plants. Part of his mission was to collect plants of economic importance. At 8000 feet he got a small, sour, red-fruited apricot of delicious fragrance and aroma, and many other interesting species of cherry and fruit trees which are being tested. A hairy form of Alfalfa from Peru has been cultivated so successfully that several million dollars worth are grown yearly in California; another, the San Pedrana variety, from Peru, is now being tested. So rapid is its growth that it can be cut every 45 days. An Australian form of *Trifolium subterraneum* shows so much promise that a second importation of seeds has been necessary. As an example of a practical pamphlet one may refer to no. 1339, "On Red Clover Culture." This forms one of the largest crops in the United States. A map is given of the Union, and each tiny dot on it indicates that 2000 acres are under clover culture. This at a glance gives definite information. How different the plan in the *Cambridge Flora*, where the whole of a county bordering the sea would be shaded to indicate a single locality on the coast. Practical methods are given to determine the germinating percentage of the seed, and how to detect the presence of seeds of weeds, good figures of each being given. No. 1381 is another excellent "Bulletin on Herbaceous Perennials." It can be obtained from the Govt. Print. Office, Washington, for 15 cents. Three Bulletins, 1400, 1 and 2, are devoted to the Cultivation of the American Cranberry, *Vaccinium macrocarpon*, which occurs as an adventive in Flintshire. The cultivation was begun about Cape Cod between 1810 and 1820, and was not a success; to-day about 30.000 acres are under its culture, nearly half of which are in Massachusetts. Half a million barrels are produced in the States of the value of over 5½ million dollars. The Scottish Cranberry is *Vaccinium Vitis idaea*, but we never heard a vernacular name "Fox berry" used for it in Britain. It occurs in the States, but for commercial purposes it is chiefly collected in northern Europe. Another eminently useful publication (Dep. Circ. 323) is, "How to Collect, Label, and Pack Living Plant Material for Long Shipment," by B. T. Galloway. Issued at 5 cents, with ten full-page plates, it cannot be called expensive. In Circ. 51, it is claimed that a plant undistinguishable from the Wild Emmer, *Triticum dicoccum*, var. *dicoccoides*, has been produced synthetically by crossing a variety of *T. vulgare*, var. *Early Red Chief*, with var. *Marouani* of *T. durum* Desf. The results of culture trials are given. It is claimed that through hybridisation a form similar morphologically and genetically to the true wild type has been obtained.

WARD, Captain KINGDON, F.R.G.S. THE ROMANCE OF PLANT HUNTING. tt, xi., 275, with many illustrations and a map. Demy

8vo. Edwin Arnold, London, 1924; 12/6. From time to time we have drawn attention to the vivid accounts of plant-hunting in the far east by Captain Kingdon Ward, which have appeared in the *Gardeners' Chronicle*, and now we have from his pen a handsome and fascinating volume giving his experiences in botanising in the high and practically unknown regions in upland China. We have seen in Mr Millais' stately volume on the Rhododendrons how much additional knowledge of them and other plants we owe to this intrepid traveller. The Botany of China, that great mysterious empire, seems well nigh inexhaustible despite the early workers Bretschneider, Fortune, Loureiro, Hance, and many others in the earlier days, and in more recent times Hancock and Henry. Yet still an unending stream of new things comes in from Farrer, wrecked in the midday of his life; from Forrest, and not in any lesser degree from our author, so that at Kew to-day there are accumulations of material amounting to many, many thousands of specimens which when they are worked out will add hundreds, and possibly thousands of new species. One would not be surprised if eventually the flora of that immense and varied area were not far short of 15,000 species. The present volume treats of his journey through Burnah into Yunnan, and his experience is not all beer and skittles. The atmospheric conditions seem wretched, for when it is not raining—and it rains weeks on end—it is snowing, and he graphically describes the conditions in which poor plant-life struggles on the precipitous screes, subject as it is not only to fierce winds, sleet and tempestuous rain, but also to the cannonade of falling rocks and the slides of the upper surface of debris. Yet here, with the long tap root driven down to the water-bearing strata, beautiful species are to be found, although to gather them in flower or seed one has to face a barrage almost as deadly as that of Flanders fields. Szechwan was explored, and there on the cliffs of Muli facing east to the Litang river are the great screes. On the cliffs themselves he gathered many a rarity, including the great rounded cushions of *Primula Dubernardiana*, studded with yellow-eyed mauve-coloured flowers, but the gem was *Campanula calcicola*, which received the Award of Merit at Chelsea in 1923. "Only an inch high, it forms mats and nests of olive-green kidney-shaped leaves, veined with pale jade, and covered with a soft white down, From this mosaic rise clusters of large nodding, tremulous, deep violet-coloured flowers.'' He describes graphically the glory of the '' *Lapponicum* sea,'' the wonderful Rhododendrons of that group whose type is so poor and dubious. He tells us that only one species, *R. nivale*, is known from the Himalayas, but here in spring the moorland puts on a wedding garment, for you may wander for days through a chromatic surf of Rhododendrons, rose-pink, ivory white, lavender, plum-purple, crimson and amber yellow. It is Western Szechwan, the Tibetan Marches, which is the home of the *Lapponicum* Rhododendron. He says that with the exception of the yellow-flowered forms all have crimson or purple styles, but each species itself has a wide range of colouring. He had a hard journey from Likiang, the mountain range of which has peaks 21,000 feet high, to Yungning. Only once was the path below 9000 feet altitude. when the hot gorge of the Yangtze had to be descended. Alas, I only know the wonderful gorges of that mighty stream, but what he found there, and all the other floral beauties he describes, must be sought for in the book itself, which will repay the reader whether he be botanist or traveller.

WATNEY, Lady MARGARET. HERBS. pp. 121, 1924. Privately printed. Extracts from The Herbalists relative to uses and properties of Herbs.

WEATHERS, JOHN. MY GARDEN BOOK: Prepared for the Daily Use of all who own a Garden, Big or Little. pp. xvi., 744, with 24 coloured plates and 392 illustrations. Longmans, Green & Co., London, 1924; 36/-. On the cover it states that '' In this work the author, who has had forty years' experience in practical, scientific, and commercial horticulture, not only deals with the best practical methods of modern cultivation and propagation of plants, but also with the reasons underlying the various operations. The work is in fact a treatise on the Theory and Practice of Gardening. It aims at telling the gardener, whether professional or amateur, in plain and untechnical language not only how to perform the work in the fruit, flower, vegetable, rock, bulb, or water garden, but also gives reasons why it should be done in a certain way.'' The claims made in the foregoing statements are not based too high, for the book will be a *vade mecum* to its happy possessor. In Sir Frank

Crisp's "Mediæval Gardens" allusions were made to those belonging to the religious establishments, and Mr Weathers rightly says that had it not been for the monastic gardens such as those at Thorney, Newstead, and Battle Abbeys, but little advancement in the art could have gone on. He traces the development influenced by the Crusaders, and by the discoverers of this new world who brought home many spoils. Gardening was fostered in England by the so-called Physic Gardens such as that of Lord Burgley's at Holborn. He makes a slight error in attributing the foundation of the Oxford Physic Garden as at Magdalen College in 1622. It is true the fee-simple of the ground is vested in that College, and they have been generous donors to its upkeep, but it was a gift of Lord Danby to the University as a whole, and it is now kept up by them. He tells us that Kew Gardens cover 288 acres. He gives a good view of a woodland scene with the Daffodils, and there is a delightful coloured one with the Bluebells (which are *Scilla nonscripta*, not *S. festalis*, as is given in the text), in which the "heavens are upbreaking through the earth." One of the most valuable features in the book is the advice given as to gardening operations. Then 179 pages are given up to the description of Hardy Herbaceous Perennials, in which those in general use are described in plain language. It may be added that throughout the volume the scientific names are most carefully spelled, and due attention is paid to putting capitals in the right place. The derivation of the scientific generic name is usually added. We wished the *Statices* had been given their correct name *Limonium*, and the Hart's tongue, *Phyllitis*, instead of the no longer valid *Scolopendrium*. There seems no reason to add " probable " to the American origin of *Zea Mays*. Surely there is no doubt of its being American; it is the actual area from which it originates that may be doubtful. There are useful chapters on Hardy Bulbous Plants, Climbing and Trailing Plants, the Rock Garden, Water and Bog Gardening, Hardy Ferns (which is rather condensed), Ornamental and Flowering Trees, and Shrubs and Roses. Part 3 is devoted to Glass-house Gardening; 4 to the Fruit Garden; 5 to the Vegetable Garden, and in Part 6 will be found a most useful " Garden Calendar." The work is certainly one of the most comprehensive yet published, and large as it is, it would be difficult to suggest in what way it could be shortened without sacrificing its value. We hope the sale will be commensurate with the labour given to it not only by the able author, but by the publishers, who have produced a most attractive book.

Weatherwax, Paul. The Story of the Maize Plant. pp. xv., 247, coloured tt. 2, fig. 173. University of Chicago Science Series. Univ. Press, Chicago, Illinois, 1924. We have recently alluded to the Text Books on Wheat by Prof. Percival, and on Rice by Prof. Copeland. Here we have a volume to complete the trilogy by the Professor of Botany of Indiana University, which, arranged on different lines, treats of one of the most important vegetable foodstuffs in the world in an attractive and portable volume, excellently printed, clearly illustrated, and with a condensed literary style which conveys in the fewest words and with a clarity of meaning what he wants to tell. "As the only complete modern exposition of the morphology of the Maize plant, the author has given a well-balanced, reliable summary of our present botanical knowledge of maize. He eliminates the influence of the economic point of view and describes it as a plant with problems of its own to solve, a life of its own to live, and a part of its own to play in the drama of organic existence. His treatment of the biological individuality of maize is accompanied by a brief discussion of the influence of corn upon ancient and modern civilisations, and the reciprocal reactions of human activities upon the plant." Under Wheat and Rice attention was drawn to their ancient lineage, yet lengthy as is that of the two old-world cereals, some American authorities have claimed for the Maize an even more remote antiquity—as much as 170,000 years. Even the few fossil remains of Maize are practically the same as the present living plant. Whether as lengthy as this who can say, but from its wide distribution, and its many vernacular names there can be no doubt that as a cultivated plant it is one of the oldest known. Even in the fifteenth century it was grown as far south as Chile and Argentina, northwards as far as the Gulf of St Lawrence, but it was in Peru and Mexico where it attained the greatest degree of successful growth. The early Aztec boasted of his being a corn-eater, while his barbarian neighbours were mere "suckers of blood," in this way reversing the Eastern idea, where the Nomad hunter looked down upon the tiller of the ground. Professor Weatherwax believes that Mexico or Central America was the locality in which domestication first began. Like many other domestic vegetables, its wild ancestral form is only conjectural. His account of its early culture is a fascinating study, in which, avoiding dogmatic statements, he gives some very valuable information. He says all the fundamental varieties known to-day, as determined by the nature of the endosperm, seem to have been known to the various Indian tribes, but their taste for the gaudy kept in common use a wider range of colours than is known to the average American to-day. It will astonish many an English reader to learn that white, reds, yellows, and purples were maintained in a single variety, others, such as the "sacred corn" of the Mavajos, show striking colour patterns. In Mexico the early culture was developed on islands, some of them artificially formed, making floating gardens, where in a tiny hut and with a patch of corn, the owner led his simple life in safety, needing no soil fertilizers, and no irrigation. The influence upon the natural life and upon his religious views is a fascinating story. Although in the Song of Hiawatha there are some inaccuracies the story showing the Indian's respect for the plant is mainly true. It will be remembered that Prescott tells us in the great temple at Cusco were twelve immense silver vases full of corn; they were as high as a good lance, and two men with outstretched arms could scarcely span them; and there was a garden filled with life-sized maize plants made of gold and silver. Linnaeus gave the name *Zea Mays* to the plant, but it is believed by many botanists that its actual ancestor was a species of *Euchlaena*, a species of which is the teosinté from Mexico, which readily crosses with Maize. Its identity with Maize is disputed by the author, and he shows how Burbank's claim to have produced Maize from teosinté is vitiated by this fact that the parent plant with which he operated was itself a hybrid with maize as the other parent. His view is that *Zea*, *Euchlaena*, and *Tripsacum* descended directly from a common ancestor now extinct, which was probably a herbaceous perennial. He learnedly suggests its evolution to monoecism and to an annual habit. The author says Maize is readily known from the other American genera by the pistillate inflorescence and the fruit; he regards it as the most highly specialised grass-plant in existence. Its first authentic discovery was made by Columbus—his first Christmas meal in America had Maize for its main constituent, but its fleshy rival was the iguana, which perhaps to him seemed a fearful beast for which it was not worth risking his digestion. He brought the maize to Europe; it was grown in Seville before 1500, it finds a place in Cibo's herbarium about 1540, and a few years after Rauwolf saw it grown in the valley of the Tigris, so rapid was its conquest of the East. It is beautifully figured as Türchisch Corn in my copy of Fuchs of 1543. The author supplies some maps showing its present culture in the various continents. The chapters on the structure, ecology, endosperm, heredity, products, and uses are of great value, and there is a good Bibliography. The book will take a high place among the monographs of our vegetable food-products. It may be remarked that at Kew there is an unpublished monograph on the subject by the French botanist, M. J. Gay, which may perhaps see the light of day in the Kew Bulletin. Prof. Weatherwax concludes his work by quoting a poem by Edna Dean Proctor, written on the occasion of the four hundredth anniversary of the discovery of America, from which a few lines are given here:—

> The rose may bloom for England,
>   The lily for France unfold.
> Ireland may honour the shamrock,
>   And Scotland her thistle bold;
> But the shield of the Great Republic,
>   The glory of the West,
> Shall bear a stalk of her tasseled corn,
>   Of all her wealth the best.
>
> . . . . . .
>
> But the wide Republic's emblem
> Is the bounteous golden corn.

Weiss, F. E., F.R.S. A Quilled Dandelion, in Journ. Bot. 304, 1924. Found at Manchester and proved to be apogamous, reproducing similar plants with pale lemon-coloured blossoms. He suggests the name *T. officinale*, var. *cucullatum*. A tri-hybrid Primula = *P. acaulis* × *elatior* in Manchester Memoirs lxviii., 8, 1924.

West, W. (the late) and G. S. West (the late). A Monograph of the British Desmidiaceae. Vol. v.: Nellie Carter. pp. xxi., 300, tt. 39. Printed for the Ray Soc., London, 1923; 37/6.

WILD FLOWER MAGAZINE. Secretary, Miss Dent, Flass, Maulds Meaburn, Penrith; subscription 5/-. The popularity of the useful Society of which this is the organ is well maintained, notwithstanding the great loss of Miss Gertrude Bacon's work owing to a lamentable breakdown in health. We trust her delightful literary powers will soon be in evidence once more. It was a most fitting gift that the members gave her—an antique writing table—as a token of their appreciation of her kindness. There has been a marked improvement in the naming of plants, thanks to the watchful eye of Lady Davy and other officials. Hon. Mrs Guy Baring gives a pleasing account of the Excursion of the Botanical Soc. of the Brit. Isles to Llanberris. Miss Hillard and Dr Hellon's last botanical notes appear. Their death is a severe loss to both societies.

WILLMOTT, ELLEN. WARLEY GARDEN IN SPRING AND SUMMER. Ed. 2; 10/6:

OBITUARIES.

BAILEY, CHARLES, M.Sc. Born in Warwickshire, June 18, 1838; died at St Mary Church, Devon, September 14, 1924. He was educated at Shrewsbury and in London. In 1854 he entered the service of Messrs Ralli Brothers of Manchester, in which firm he rose to a position of great trust and confidence which he held until his retirement in 1909. He was a Congregationalist and an earnest worker at Sunday School and Bible Class instruction. Attending Professor Williamson's lectures at Owen's College in Quay Street, Manchester, in that dingy lecture-room, he became interested in botany and in botanical collecting—indeed, as he said, there were laid the foundations of that enormous and important herbarium which was destined in after years to be one of the great possessions of the then unformed Victoria University. Here, as so often is the case, amid grimy and sordid surroundings, greater dreams are imagined and more important schemes planned than is often the case in huge and magnificently equipped laboratories or lecture-rooms. Bailey threw himself into the intellectual life of Manchester, notwithstanding its moist and depressing atmosphere, with great zeal, working hard not only at botany but as an ardent student of the microscope. His collection of microscopical slides numbered many thousands, and he had some very excellent and costly instruments. He was one of the most valued members of the Leeuwenhock Club. One of the founders of the Manchester Field Club he accompanied them on many excursions, not only in Lancashire but in the surrounding counties, and papers of considerable value were contributed to it by him. For many years he was the Treasurer of the Manchester Literary and Philosophical Society, and for it he wrote papers "On the Adventitious Vegetation of the Sandhills of St Anne's-on-the-Sea, North Lancashire" (1902), and "On the Structure, the Occurrence in Lancashire, and the Probable Source of *Naias graminea* Delile, var. *Delilei* Magn." (1885). This alien aquatic was discovered there by Mr James Lee in 1884. The paper is illustrated with some good figures and careful anatomical details, and bears witness to his botanical skill and acumen. He began his botanical collection in 1861, and of this Herbarium he contributed a most valuable account to that Society in 1917. In 1878 he was admitted a Fellow of the Linnean Society, and he was also for some years a constant attendant at the British Association meetings. His Herbarium, begun as we have said in 1861, grew to be the largest of its kind in Britain. He was a great but careful collector: none of the plants which might suffer from over collection fell a victim at his hands, but he set out to make it as representative of comital distribution as was possible. He was in frequent communication with Dr J. Cosmo Melvill, and it was agreed between them that, while the chief sets of exsiccata which were issued should be purchased, Dr Melvill would take the extra-European while Bailey bought the British and European sets, thus preventing overflapping. He mounted them, he tells us, on sheets 17½ x 11½ inches. These were put in boxes having wooden frames and pasteboard lids, the lids being as deep as the box. The British portion is arranged according to the sequence of species in Druce's *List of British Plants*, and each box is labelled with Druce's numbers; the Continental portion follows the sequence of Nyman's *Conspectus* and its Supplements. The British specimens occupy 760 boxes and consist of 8,882 sheets; the European plants occupy 2417 boxes and include 208,597 sheets. The exotic plants number

21,239. This more than princely gift to the Victoria University, Manchester, was supplemented by a cheque for £500 to defray the cost of mounting, etc., and by his library of 8000 volumes and a large collection of microscopic slides, which he made over by a deed of gift in 1917. He also added the plates of Sowerby's *English Botany*, Fryer's *British Potamogetons*, and Hanbury's *Hieracia*. Two copies each of Nyman's *Conspectus*, Willkomm and Lange's *Prod. Fl. Hispanica*, Grenier and Godron's *Flore de France*, Koch's *Syn. Fl. Germanica* were cut up to paste on the lid-covers so that time would be saved to the consultant, who thus would have close to him the description of the plant he was examining. As Bailey well says, "Every herbarium represents part of its founder. It will show his weakness and his strength, his preferences, idiosyncracies and fads. It will disclose his accuracy or otherwise in the records which it includes; his acumen or the lack of it, in appreciating the facts and ways of nature. It embalms the friendships of his life, the botanical stimulus which he has received, the countries which he has visited. It tells of hair-breadth escapes by land or water; it reminds him of threatened arrests for trespassing or poaching. Its accumulations testify to the life-giving and life-sustaining pursuits with which its collections have been brought together. It has undoubtedly introduced him to a long roll of the most worthy and lovable of his fellow-creatures. The foundation of a good herbarium rests upon a thorough grounding in the main facts of structural and physiological botany." Our readers will whole-heartedly subscribe to this, and its health-giving powers are evidenced in Mr Bailey's case by the ripe age of 88 which he reached. His herbarium speaks for itself; it shows that he was a man of prodigious and continuous industry; it bears witness to his preciseness and to his friendliness, as is to be seen by the long list of contributors to it, to his generosity by the large sums which he must have annually expended on its growth and upkeep, and by the fact that during his life-time he saw it well-housed and cared for in the University of the City of which he was such a respected member. He published in 1917 a full description of its contents, which bears witness to his methodical habits and to his prodigious industry. We may add that Dr J. Cosmo Melvill also gave to the same University his Herbarium, which consisted of over 225,000 sheets. Mr Bailey had many duplicates. Of these he sent over 6000 sheets to Queen's College, Belfast, about 16,000 to other institutions, and swelled our own contribution to the University of Louvain by 2000 specimens. Mr Bailey joined our Club about 1862. In 1875 he became Local Secretary, and in 1879 he accepted the onerous office of General Secretary. We had been lucky in having in upwards of 40 years few changes, our Secretaries having been Dr J. Boswell Syme, the author of *English Botany*, Mr J. Gilbert Baker, F.R.S., the author of the *Flora of North Yorkshire*, and Mr C. Bailey, M.Sc., who held office until 1903. He carried out his duties in his accustomed unassuming and efficient manner. He liberally supported its funds and was a most long-suffering Treasurer, yet for reasons difficult to understand the members, who were not only critical botanists but perhaps somewhat hypercritical in other details, by a vote ruled that he should not make critical remarks on plants sent in for distribution, and some of its members, especially those who ought to have been most loyal to him, started another Club practically on the same lines, which did not lessen the difficulty Bailey had of managing our own or making both ends meet. On one occasion there was a by no means pleasant circular sent round objecting to his acting as Distributor. Although he was the most patient of men and one of the last to take offence, I know this action, which savoured of ingratitude, pained him and probably induced him to think the burden was hardly worth the work. He never publicly complained, but he wrote in January 1898 that he had the plants sent to him, and he did the mechanical work of making up and posting the parcels, "and though I tried to get the parcels made up before I took my autumn holiday, I was not able to do so as jury engagements for two weeks, and two commercial inquiries from the India Government, have absorbed no end of my time, one of which is still proceeding, to say nothing of church work and my ordinary business duties. If members therefore have written to you referring to their great disappointment in not getting their parcels ready, it is not because of strenuous efforts being lacking on my part. They must bear in mind, and I would ask you to take it to heart yourself not to be annoyed at such remarks, that all the work which is done by successive editors and distributors is entirely honorary labour and can only be expected at their convenience, and that when done, as it has been done with conspicuous self-sacrifice, the least that should be expected would be gratitude and a desire to believe the best. I am reluctantly coming to the conclusion that a business man like myself is unsuitable to hold the office of Secretary, and as the Club is carried on as it has been at a considerable pecuniary loss to myself ever since I took it, 19 years ago, I think the time is coming when it must pass into other hands." However, I induced him to keep on for a few years, though the growing demands on his time from other quarters determined him to relinquish the office in 1903.

My own acquaintance with Mr Bailey began by correspondence in 1874, just half a century ago. Looking around, what a gloomy stock-taking it is. Of the active botanists of that time how few are left. Yet we are grateful to see that Messrs T. Bates Blow, Arthur Bennett, James Groves, Sir Everard Im Thurn, and Colonel Wolley-Dod are still members of our Society. Bailey was the kindliest correspondent, and he wrote a most enviable copper-plate hand. I was brought pretty closely in touch with him in the eighties and nineties, since I acted as Distributor in 1889, 1893 and 1898. Nothing could have been more helpful and thoughtful than his manner of conducting the somewhat thorny path we had to traverse. He told me of his intention of retiring from the Secretaryship, and suggested I should take up the reins. Before doing so I had an interview with him in Manchester and found him to be a tall, good-looking man of easy address, with kindliness beaming on his face. He told me that the deficit on the editorship was over £200. The pecuniary difficulty did not act as a deterrent, but I was utterly unwilling to act merely as a Secretary with such limitations as he endured. Eventually, in order to save the Club from lapsing, I put myself at his service. In September 1903 he issued a circular explaining the position and asking for the views of the members. It was sent to 42 names that were on the book, of whom 30 were subscribing members for that year, and 36 replies were received. Four members retired, one being nine, another seven, another four years in arrears. These arrears came out of the Treasurer's pocket. There were 4 or 5 who had not paid for over 20 years. Thirty-one of the members desired that it should continue and were willing to increase the subscription to 7/6. Seven members were unable to suggest any name to act as Secretary, one chose a member who had resigned owing to old age, and the others were kind enough to select me to "*manage the affairs* of the Club." Mr Bailey was good enough to guarantee the deficit, if any, for two years, so I accepted the post, and I am glad to say he was never called upon to make up any deficit, willing as he would have been to do so. One was glad to take part in the presentation to Mr Bailey of an album of the photographs of the members, and an address of grateful thanks for his long and faithful service. He sent a characteristic reply: "Some few weeks ago, through the hands of Mr G. Claridge Druce, I received an unexpected pleasure from the members of the Botanical Exchange Club of the British Isles, in the form of a handsome album containing portraits of British Botanists with whom I have been in pleasant correspondence for many years. Some of these faces are those of old friends whom I have met, and some I have never had the good fortune to meet, but whether known or unknown to me personally, I value very highly the gallery of portraits which you have sent me, and still more the kind thought which prompted such a gift and the friendship which it cements. Please, therefore, receive my warmest acknowledgments for so agreeable an evidence of your regard and begging your acceptance of the enclosed portrait (this is reproduced in the present *Report*), taken specially for you at the beginning of October last.—I remain, yours faithfully, CHARLES BAILEY." This is dated December 15, 1904, from Atherstone House, St Anne's-by-the-Sea.

He was always ready to help a brother in time of need, and in 1905 our friend, Mr Fryer, of Chatteris, who had fallen on evil times, was too proud to accept any ordinary method of help, although his income was about a shilling a day. He said he enjoyed the simple life which it entailed, but I was determined to remove such a scandal as allowing a cultured man, who had done such service to the investigation of Fen-land vegetation, especially the Pond-weeds, to live in such abject penury, although he would bitterly resent this word as applying to his condition. A willing helper was Mr Bailey, as his letter of March 7, 1905, shows: "Much obliged for your letter of the third and for what you have written to Mr Fryer. It is much if he lets you have your way in the matter, as he is so much of a law unto himself. However, I send you a cheque for five pounds to apply as you have opportunity and if more is wanted ask me again.

I am sorry that the official botanists will not support your application to the Treasury for an annual, or a single grant. I think the latter might go through. The best course is for a friend of the Prime Minister's to see him personally and press for one or the other." On May he writes: " I am very pleased to see how successful you have been in circumnavigating Mr Fryer—I think only you could have done it However, the means are immaterial if they will admit of the end designed being accomplished. Every year that his work is left undone (this refers to his uncompleted volume on the Pondweeds) increases the difficulty of his doing it as he would wish it done, and his years are now so lengthened as to make it risky to tamper with them. I suppose the other matter referred to in his letter has reference to a grant (in a lump sum) from the Treasury. If so, I am glad to see how well he takes to the proposal. (This, I believe, alluded to a small grant from the Royal Society which we were enabled by the help of official botanists to get through.) I return you his letter with thanks for the sight of it. All his letters show the same kind of feeling and refinement. I corresponded with him forty years and always supposed I was writing to the squire of his village, until a mutual friend who lived at Chatteris told me he was a working gardener—a fact that greatly increased my regard for him. I have had a nice Easter holiday with members of the Manchester Field Club at Ashbourne, Derbyshire, but the season is so backward that we did not find much. I went a day or two before the rest of the party and drove over to Shirley to pay a visit to the Rev. W. R. Linton, whom, like Fryer, I have never seen. Both he and his wife were out, and though they afterwards gave us three different dates I was unable to leave my party, as after Prof. Weiss left I was in charge." Again in January 31, 1908, he writes: " I am extremely obliged to you for sending me a copy of your *List of British Plants*. The size of the work is out of all proportion to the labour it has taken to evolve it. Every line of it is the result of independent investigation, checking of authorities, and the like, and very evidently you have had to sit as judge, jury, and executive officer upon every plant cited, and upon a good many others not cited, and whose non-appearance in the *List* is fair evidence, for the present, that they have left your court without any stain upon their character! The principal features you had previously told me about. I am specially pleased with the large inclusion of aliens. Much as most botanists like to discard them, they are a very recent feature in our flora, and as the country is open to human aliens without let or hindrance, why should not their associated plants be recognised? But what a number they tell up to and how they increase. *Vallisneria spiralis* has turned up as growing in the Reddish Canal—the locality for *Naias graminea* and *Chara Braunii*, and this is only one of scores of others. To record them is therefore the best inducement to be on the lookout for others. Stockport, St Anne's, Accrington are the most prolific seats of such introductions: many of them I find are traceable to bird-seeds, which I am told are not only the siftings of grain, and therefore so have a marketable value, but are actually imported as bird-seeds."

Another letter shows incidentally that his work was not confined to science or business. On December 1919 he writes: "My copy of your *Tweedside Flora* reached me a few days ago, and I congratulate you very heartily upon its thoroughness. You and Miss Hayward between you have succeeded in determining no less than 348 species, against 526 of Planchon's celebrated memoir, which I have looked upon as the facile princeps of such investigations. I was not aware that so many as 800 species have been recorded in the *Florula Juvenalis* and, subsequently I am glad that you have given a deserved rebuke to some suburban botanists on page xxi. Dr F. H. Bowman, who is alluded to in more than one place in your *Adventive Flora*, is the gentleman who succeeded me in a large Bible Class which I conducted at Manchester for some forty years; he was remarkable for wearing a Scotch cap, by which he was universally known on the Manchester Exchange." After his removal from Lancashire to a delightful home on Cleeve Hill near Cheltenham (for alas in 1911 he had a paralytic seizure from which however he made a fair recovery), he continued the arrangement of his herbarium. He lent me the *Cerastia* for the preparation of the article in the *Cambridge Flora*. On my visit to him, I detected a specimen of *Lycopodium Cyparissias* labelled *alpinum* in his herbarium, which was purported to be gathered by Shepherd, the keeper of the Liverpool Botanic Garden on Ingleborough. He writes on February 11, 1911: "I am glad you were pleased with the specimens and with the way in which they are put up. You are quite welcome to use them for any purpose you want. I am not surprised that interesting examples should turn up amongst them, as I have fished pretty wide for most of my plants." His letters were not only kindly but had always in them some fact worth reading, and rarely a bit of humour was added, as when he chaffed me about my varied spelling of the Perthshire mountain, Ben Laiogh or Laoigh "on one page, too," or when he says the "pin-pricker was referred to the other day as *Urtica Dodartii* englished as the Roman Nettle," to which one had to reply that in recognition of his—the "pin pricker's"—connection with medicine *Urtica pilulifera* seemed more appropriate.

In 1914 he had a second cerebral seizure which for a long time laid him low, but thanks to his own good constitution and to the unremitting care of one of the best of wives he rallied, but he decided on account of the climate, to move to a delightful home at St Mary Church, Devon, so that his declining years had all the ameliorations that loving thought and pleasant surroundings could give. There one had more than one opportunity of seeing him and of chatting over the Society's progress, in which he was always interested. His end came peacefully and, although there had been a gradual failing, he was only confined to his bed for a week and then suddenly and painlessly died on the Sunday afternoon in the presence of his devoted wife and sister-in-law.

BONAPARTE, H.H. PRINCE ROLAND. Born at Auteuil in 1858; died at Paris, April 15, 1924. He was the great-nephew of Napoleon, his father being Prince Pierre Napoleon, the son of Lucien, the second brother of the great Napoleon. Prince Roland, a brilliant pupil of the Lycée St Lois, entered the military school of St Cyr and gained his second-lieutenancy two years after. But his military career was cut short by an Act of 1886 which prohibited all members of royal families who had once reigned in France from being soldiers. However, the result was to the good for his military career being closed he began his travels and turned special attention to natural history not only in the tropics but in the arctic districts. He concentrated on the study of the Filices, a subject of which he became the recognised authority. His collection of them was enormous and year by year from his pen appeared the series modestly entitled "Notes Pteridologiques," in which a very large number of new species were described. The last, number xvi., treating chiefly of Madagascar ferns, was one on which his last moments on earth were spent for he literally died pen in hand. He had become possessed of the great Fern Herbarium of C. Christensen, the author of *Index Filicum*, the cost of the preparation of the 2nd Supplement of which was borne by Prince Roland. That author in 1920 dedicated a Madagascarian species of *Trichomanes—T. Bonapartei* to him. Earlier he had received the greatest scientific honour of his country in being elected a member of the Institut de France. Few deserved it better, for his life was dedicated to science in a broad sense, and anthropology, ethnology, and zoology had in him a sympathetic worker. His recreation was alpine climbing and he became President of the French Alpine Club. His publications include in 1883 " Les Inhabitantes de Suriname," in 1885 " Le Theâtre Javanais," " Premiers Voyages," " Derniers Voyages," " Recents Voyages des Neerlandais à la Nouvelle Guinée," " Les Lapps de Finmarck," " La Fleuve Augusta," "La Golfe Huon," "La Pêche à la Balaine sur les côtes de Norvège," "Une Excursion en Corse " etc. He was an Honorary D.Sc. of Upsala and Cambridge, and was twice President of the French Geographical Society, his last tenure of office of 14 years terminating only with his death. He was also an Honorary Member of our Royal Geographical Society. He married Mlle. Felix Blanc, the heiress of M. Blanc of Monte Carlo, by whom he had one daughter, Marie, who, in 1907, was married to Prince George of Greece. Not only had he the great Herbarium of Ferns, probably the finest in existence, but he was also the possessor of the valuable herbarium formed by M. Rouy in the preparation of the *Flore de France*. I was fortunate enough to make the acquaintance of His Highness at the Darwin Celebration at Cambridge when, after my introduction, we went for a walk along the charming college backs. On the walls grew *Linaria Cymbalaria* and he asked me its name. I told him it was the very plant which Dillenius, the Oxford professor, asked Linnaeus, on the occasion of his visit to the Oxford Physic Garden, to demonstrate and to show to which of his classes he would refer it. Linnaeus did this in such a clear and convincing manner that it laid the foundations of a long and real friendship. Prince Roland was kind enough to ask me to call on him in Paris and there, at his palatial residence in the Rue d'Jena, I had the opportunity of seeing his great Herbarium of about half a million of specimens including Rouy's most valuable French material. He was a man of imposing stature, and goodly build. He had a delightful, if somewhat shy manner, but real kindliness beamed from his face. Although without the slightest facial resemblance to each other he always recalled to me Charles Rothschild, and he had many of the same charming characters and the same kindly outlook on science and scientific things. I last saw him about three years ago when passing through Paris with a young lad. I asked the boy, as this was his first visit to the French capital, what were the four things he would like to see. The answer was Napoleon's tomb, the Eiffel Tower, the Louvre and Notre Dame. So our first morning was spent in visiting that impressive memorial to Napoleon. Then without saying anything of our next call, I went to the Rue d'Jena, but was told that His Highness was not receiving that day. I left my card with the Major Domo, who handed it to his Secretary, who asked me to wait a few moments as he thought the Prince would not like me to go without seeing him. Soon I heard the well-known voice saying come up, and I had what proved my last interview with him. So the boy not only saw the tomb of the great warrior but his distinguished, peaceful representative. He showed us some of the relics of the past, his magnificent library of 100,000 volumes, and again we went down to the rooms where the gigantic herbarium was so well stored. He was kind enough to name a large quantity of exotic Ferns for the Fielding Herbarium, and it was a matter of great regret that he did not live to receive any recognition from Oxford of his great services to Botanical Science.

Britten, James. Born, London, May 3, 1846; died suddenly in London, October 8, 1924. Educated privately, he studied medicine and was for some time assistant to a doctor at High Wycombe, Bucks, where he began accumulating material for a Flora of that county, several papers on the subject appearing in the *High Wycombe Magazine of Natural History* and in the *Naturalist*. When 23 he went as an assistant to Kew Herbarium, and while there wrote an account of the South African Crassulaceae for the *Flora Capensis*. In 1871 he entered the Botanical Department of the British Museum where he worked until 1909. Even after his retirement in that year he still kept in touch with the Museum work, helping and criticising and working on the early collections, the results of which he published in the *Journal of Botany*. He published a work on European Ferns and, in conjunction with R. Holland, compiled a *Dictionary of English Plant Names* for the Dialect Society, which is the best literature we have on the subject. Britten was much interested in botanical nomenclature, taking part in many heated discussions on the subject, and after the Vienna Congress he and Dr Rendle published their *List of British Seed Plants and Ferns*. He edited a re-issue of Turner's " Names of Herbes " and, in collaboration with Professor G. S. Boulger, a *Biographical Index of British and Irish Botanists* with three supplements. He edited the British Museum publication of the plants collected in Australia by Banks and Solander and in 1871 compiled a List of Plants growing in Berkshire. In the year 1880 he succeeded Dr Trimen as editor of the *Journal of Botany* to which he had been a contributor from the beginning. He was unremitting in his work as editor and contributed many valuable papers to the *Journal*. A vigorous, if polemic writer, he will be greatly missed by his botanical associates and friends. [Contributed.]

Brotherston, Robert Page. Born at Ednam, Berwick, February 7, 1848; died at Old Scone, Perth, December 21, 1923. A frequent and welcome contributor to the *Gardeners' Chronicle* for many years. In 1874 he became gardener to the Earl of Haddington at Tyninghame, whence I had a letter from him last autumn on the occurrence of *Erinus alpinus* at Morham, East Lothian, where it is adventive. He published " The Book of Cut Flowers " in 1906, a useful work which had a deserved popularity. He had a good knowledge of British plants. See *Gard. Chron.*, September 1, 1923.

Coste, Hippolyte. Died November 1924. He was the distinguished author of the well-known and excellent *Flore de France*, which was published in three volumes. Vol. i., dated 1901, contains 416 pages with map and 1082 figures; vol. ii., dated 1903, of 627 pp. with 1567 figures; and vol. iii., dated 1906, with 807 pp. and 1705 figures. It was originally issued in parts, the dates of publication being given in the third volume. The clearness of the descriptions, the excellent keys and the well-drawn figures from the Abbé's own pencil combine to make this one of the most useful

Floras in existence. The loss of its author to French Botany is well nigh irreparable. One has been told that his remuneration—a sadly ill-fitting word—was only £25, but we may be sure that it was a labour of love. It is the French Bentham, only, it must be confessed, it is on a higher standard. One keeps it in the place of honour on the reference shelf, and few days go by without finding it of use, and one's admiration of it increases as time goes by. The Abbé wrote this pathetic letter to his life-long friend, M. Ch. Duffour, on November 21, 1924 :—Mon cher Ami,—Ma terrible maladie de coeur n'a cessé de s'aggraver dans le courant de cette année et je suis persuadé que je suis arrivé à la fin de ma vie. Je n'ai pas quitté mon presbytère cet été. Depuis longtemps je n'exerce plus ma profession. Je garde la chambre et même le lit presque toutes les journées et mon travail se réduit à quelques lectures. Je n'ai pu cet été examiner les plantes critiques de mes correspondants. A moins d'un revirement subit de ma santé, que je n'espère pas, je suis perdu et n'arrivera pas à la fin de l'hiver! Votre cordialement attaché, H. Coste. His fears were too soon realised for M. Duffour's letter of sympathy of the 24th November came back on the 30th of that month marked " Renvoyée à son adresse pour cause de décès." We are informed that the *Flore de France* is now out of print, but an endeavour will be made to obtain a few copies.

Deane, Henry. Born at Clapham, 1847; died at Melbourne, March 12, 1924. An authority on Tertiary Palaeobotany, he was educated at Queen's University of Ireland, Galway, and later studied engineering at King's College, London. In 1880, owing to indifferent health, he went to Sydney where in 1889 he was made engineer-in-chief for the Kalgoorlie-Port Augusta Railway. He was twice President of both the Royal and the Linnean Societies of New South Wales. He collaborated with our Hon. Member, Mr J. H. Maiden, in some papers on the *Eucalyptus* and collated the material and wrote the letterpress for Fitzgerald's Australian Orchids. He was the son of Henry Deane, a distinguished pharmacist and microscopist of Clapham, in the sixties, who selected for me my first binocular.

Hartog, Professor Marcus M., D.Sc. Born at London, August 19, 1851; died at Meudon, France, January 21, 1924. The second son of Prof. Alphonse Hartog, he was educated in London and at Trinity College, Cambridge. In 1874 he was placed in the first class in the Nat. Science Tripos. He then went to the Peridenya Gardens in Ceylon where he was assistant director, and in 1877 obtained a position as demonstrator and lecturer in natural history at Owen's College, Manchester. Later he got the chair of Natural History at Queen's College, Cork. He retired in 1921 and went to live near Paris where he died. He was a constant attendant and a somewhat frequent speaker at the meetings of the British Association, but he made no contribution to British Botany. He seemed rather to lack the wit of the Celt and the conversational charm of the Latin race.

HELLON, ROBERT. Born at Workington, 1854; died at Seascale, November 9, 1924, aged 70 years. He was educated at Wardrow's School and Grove Park Grammar School, Wrexham. He studied Chemistry in Germany and France, subsequently taking the Ph.D. at Heidelberg under Professor Bunsen. He then went into partnership with our late respected member, Mr Alfred Adair of Egremont, their profession being that of analysts and metallurgists. He became an analytical and consulting chemist at Whitehaven, and subsequently was appointed County Analyst for Cumberland and Westmorland, a post which he occupied for the past 35 years. He was an acknowledged authority on the chemistry of tanning and during the war was often consulted with regard to boots and leather goods. Dr Hellon served on the Council of the Society of Public Analysts and was also on the Council of the Institute of Chemistry. He was a Fellow of the English, French, American and German Chemical Societies, and was Past President of the International Association of Leather Chemists. He had a whole-hearted interest in scientific education, and was a warm and generous supporter of any project which he deemed of educational value in the widest sense. He was one of the founders and a past President of the Whitehaven Scientific Society. In religion a Wesleyan, he was a valued member of that body, and for some time filled the office of steward at Seascale. He was made a county magistrate in 1913. In his early life he had a most serious operation on the temple in order to relieve the intense head-pain from which he suffered and, although the risk was considerable, the operation proved successful. Although not robust, when I was last at Seascale, we had a very pleasant walk together and he showed me *Gentiana baltica* and *Geranium lancastriense* which were new to the district. He also directed my attention to an extremely small *Plantago* which deserves further study. A dried specimen which he sent me suggested *Littorella* but it is a *Plantago*, either *maritima* or possibly a starved *Coronopus*. [It proves to be a *Coronopus*.—Ed., 1925]. He hoped to cultivate it. He was very delighted when I showed him *Fumaria Bastardi* as a garden weed. One had heard much of his kindness, and all the good things I had heard about him I found were amply justified. He had a truly scientific mind and was not apt to rush at conclusions. Had his health held out there is no doubt that he would have rendered considerable service to botany. He had a large and well-selected library and this was placed at the service of those who wanted a question unravelled, and many questions were from time to time put to him by members of the Wild Flower Society. On the occasion of our meeting I was the guest of our most generous mutual friend, Mr R. H. Williamson. He will be most sadly missed by him and by all classes and conditions in his own neighbourhood. To ourselves it is a great disappointment as one hoped from his scientific training and his wise judgment that much might have been done at the Botany of his native county. This is sadly deficient so far as the critical knowledge of plants is concerned and yet it boasts the highest English mountain and there is much botanically unexplored ground in that much visited Lake-land area, where, alas, in the future our lamented member can only be a fragrant memory. Unfortunately in the summer heart troubles came on and he became unable to write those beautifully penned and delightful letters one always welcomed. In September he took to his bed and gradually sank to rest. He was buried at Gosforth Cemetery. His wife, Miss Lees of Penrith, predeceased him nine years ago.

Hemsley, W. Botting. Born at East Hoathly, Sussex, December 29, 1843; died at Kew Lodge, Broadstairs, October 7, 1924. His father was a horticulturist. The boy was educated privately. His health being delicate, he worked out of doors in his father's establishment until 1860 when he went on the recommendation of the daughter of W. Borrer to the Kew Gardens, whence he was soon removed to the Herbarium in which by patient hard work he rose to become eventually keeper of the Herbarium and Library. His ability was soon noticed by George Bentham, then preparing the *Flora Australiensis* in the preface of which (vol i.) Hemsley's services are mentioned. However his health, which in his early years was never robust, soon broke down and he went to Sussex to recuperate. His time was not wasted for he learned Latin and French and prepared an excellent *Outline of the Flora* of that county. Then in 1874 he returned to Kew, and for nine years was engaged in working out and describing the material collected on the Challenger Expedition by Salvin and Godman. The botanical portion, written by Hemsley, appeared in the five great volumes of the *Biologia Centrali Americana*, 1879-1888, and its excellence secured him admission to the Royal Society in 1889. Subsequently he prepared a *Flora of China* which occupies three volumes of the Linnean Society's *Journal*. He also assisted Aitcheson in the description of the plants collected on the Afghan Boundary Commission and made other important contributions to botanical science. It may be recalled that his earliest published notes appeared in that useful work, Lindley & 7 Moore's *Treasury of Botany* of 18~~0~~6. He was kindly, courteous, and without side, and thus his relations with the staff at Kew were of the happiest. These are gracefully expressed by Sir W. T. Dyer in *Gard. Chron.* 381, 1909. Honours were showered upon him from many widely separated quarters, and in 1918 the University of Aberdeen conferred the degree of LL.D. on one by whom it was so thoroughly deserved, while the Royal Horticultural Society awarded him the gold Victoria Medal of Horticulture. Dr Hemsley had been paralysed for some years, but his mind remained clear to near the end. See also sympathetic memoir in Kew Bulletin 390, 1924.

HILLARD, Miss. Born February 10, 1857; died at Westbourne, near Emsworth, Hants, July 1, 1924. Her botanical interest was kept to a great degree in abeyance until the death in 1912 of her mother, to whom she had been a most devoted daughter. By that time that terrible and anguishing disease, arthritis, which defies medical treatment, had set in, and its insistent progress made life well nigh unendurable. Yet her love of field-botany was the one thing which kept the enemy to some extent at bay. Few readers of our

Reports, who noticed the frequent discoveries in Hayling Island by Miss Hillard, realised under what conditions these had been made. She was so crippled as to be unable to walk, yet whenever possible she went out in a bath chair and was wheeled from one spot to another, while her attendant brought her any thing which her lynx eye had spotted from her post of observation. It was my privilege to see her making her explorations and it was indeed a lesson of enduring patience. She was blessed with a most loving attendant who entered into the game with assiduous fervour. Day by day every inch of the district within reach of willing arms was carefully scrutinised and in this way were such good additions made. Despite! ah perhaps because, of the affliction Miss Hillard was so sweet-tempered and her persistent interest in the plants of her neighbourhood probably was one of the great solaces of a much tried life. Her health gradually got worse and a change of residence to the warmer soil of Westbourne brought no improvement. Death released her brave and cleanly spirit from the crippled body, and her loss, in some way tempered by the knowledge that her suffering was finished, is still one one most keenly feels. The memory of "a brave lady" will long remain fragrant with those who had the privilege of knowing her.

KIDSTON, ROBERT, F.R.S., LL.D., Glasgow, D.Sc., Manchester. Born at Bishopton House, Renfrew; died of heart failure in South Wales, July 13, 1924. Educated at Stirling High School and the University of Edinburgh, he went into business in a bank and about 1878 he attended Botanical Classes in the University of Edinburgh. A distinguished paleontologist who contributed over 100 papers on the Carboniferous Flora and the Catalogue of Palaeozoic Plants in the Geological Collection of the British Museum, he received the Neill Medal from the Royal Society of Edinburgh and the Murchison Medal from the Geological Society of London. He made some additions to the Flora of Stirling, and contributed notes to the *Annals of Scottish Natural History*. Among his brilliant observations were that a fern-like plant of the Coal Age bore seeds and in 1905 he produced a most valuable memoir on the microsporangia of the Pteridospermae. See a most sympathetic memoir from the pen of Dr Dukinfield Scott in *Nature* ii., 322, 1924, and one with a portrait in *Naturalist* 364, 1924.

Lynch, R. Irwin, M.A., V.M.H. Born at St Germans, Cornwall, in 1850; died at Chelston, Torquay, December 7, 1924. He entered the Royal Botanic Gardens at Kew when he was seventeen and proving industrious and intelligent he quickly made progress so that on the resignation of Mr Mudd from the Cambridge Botanic Garden he was strongly recommended by Sir Joseph Hooker for that important post. There he proved a most efficient curator. His alert intelligence, his readiness to oblige, his wide knowledge and judicious governance caused him not only to be respected but to be loved. As a consequence the Gardens became worthy of the University. Nor did he, despite the temptation, allow his love of our native flora to evaporate and he was always ready to cultivate any of our local forms which might be sent him. He was specially kind to Mrs Gregory whose violets flourished under his care. One plant he was very proud of was the Wood Betony from his Cornish cliffs which retained its pygmy character and white flowers unchanged in cultivation on the Cambridge rock-work. This he described in the *Gardeners' Chronicle* 127, 1918 as *S. Betonica*, var. *nana*, being unaware that I previously given this dwarf form the same name under *officinalis* in *Rep. B.E.C.* 122, 1917. Lynch wrote a very useful *Book of the Iris* and his paper on *Hybrid Cinerarias* which appeared in the Journal of the Horticultural Society in 1900 earned him great commendation. Other papers to the same Journal were on the *Evolution of Plants* and the *Classification of the Genus Paeonia*. He was a splendid man to work with and many of his understudies who have risen to important posts owe much to the initial training under his competent hands. A side-light is shown on this in one of his letters to me. "I beg to thank you very sincerely for the *Caltha radicans* you have kindly sent me. I am grateful at all times for anything British. Just now I have special interest in anything I can receive as I have just had a change of foremen. The one, you may remember, who did so well with British plants, has just left and is succeeded by another with whom the subject is not so familiar. I am anxious, therefore, to cultivate him and the plants together." Writing about his Cornish Betony he says, December 18, 1918, "Your letter affords me great pleasure. I shall be pleased to send you a plant of my white *Betonica* in the spring. It has never borne seed and I suppose that pollen from another plant is necessary." In 1906 the University of Cambridge, and not in too great haste, conferred on him the Honorary M.A. "in recognition of services rendered to botanical science in the University as Curator of the Botanic Garden." In 1903 he received the Veitch Memorial Medal in recognition of his work as a practical horticulturist, in 1907 he was made President of the Kew Guild, and in 1908 he received the blue ribbon of horticulture in the Victoria Medal. In 1919 his health became broken so he retired from the Cambridge Garden and took up his residence at Torquay, but the change did not greatly benefit him, and his bodily powers gradually diminished although his mental faculties remained unimpaired. Cambridge and Oxford have often been contrasted and while Cambridge may claim Ray Oxford has its Morison and Dillenius. So, too, if Oxford had a model Garden Curator in William Baxter Cambridge may point with no trembling finger to the life and work of Irwin Lynch who has so recently passed away.

M'ALPINE, Professor A. Died at Glasgow, December 6, 1924. A well-known and popular lecturer who as Professor of Botany at the West of Scotland Agricultural College made his subject attractive to his pupils. He was connected with the College since its foundation twenty-one years ago.

NORDSTEDT, Prof. CARL F. O. Born at Jönköping, Sweden, January 20, 1838; died at Lund, February 6, 1924, aged 86. This distinguished botanist was descended from Charles, the brother of Linnaeus. He studied at the University of Lund under the great algologist, Agardh, and having qualified in medicine became assistant physician at the military hospital in Stockholm. He founded the Botanical Club of Lund, and was connected with the Botanical Institution as an amanuensis for over forty years. When the younger Agardh gave his collection of over 40,000 specimens of Phanerogams to the University Nordstedt was made the conservator, and on Agardh's rich library being bequeathed to the same University in 1901 Nordstedt became its keeper, and there he worked till within four days of his death. That excellent publication, the *Botaniska Notiser*, which was started in 1839, was taken over by him in 1870, and for 51 years he remained its editor. His very important and excellently collected and preserved exsiccata of fresh water algae and Charophytes are a monument to his industry. He was made a knight of the Vasa Order in 1900 and of the Polar Star in 1906. He presented portraits of the father and brother of Linnaeus to the collections at Hammarby near Upsala. At the Darwin Meeting at Cambridge I had the honour of being introduced to him and found him a man of delightful charm. An appreciative memoir by Dr Daydon Jackson will be found in *Nature*, April 19, 1924, and a very full obituary in the *Botaniska Notiser* for March of this year.

VEITCH, Sir HARRY JAMES, Kt., V.M.H., F.L.S. Of Scotch descent he was born at Exeter, June 29, 1840; died at East Burnham Park, near Slough, July 6, 1924. He was educated at Exeter Grammar School and in Paris. In France he was engaged by the celebrated florists, Wilmorin-Andrieux et Cie, but joined his father's horticultural establishment when he was eighteen years old, a firm celebrated for its production of the first artificial hybrid Orchid, *Calanthe Dominii*. From time to time this firm has introduced to the gardening world a large variety of beautiful plants among which may be mentioned *Berberis Darwinii* from Chile in 1849, the magnificent *Lilium giganteum* from the Himalayas in 1852 and *Sequoia gigantea* from the Yosemite in 1853. It is difficult to realise as one looks at the avenue of these trees at Wellington College that they are of such recent introduction. They also introduced the lovely *Lapageria rosea*, so named from Josephine Lapagerie, the wife of Napoleon, a native of Chile sent out in 1847, the Melastomaceous *Medinilla magnifica*, from Manilla which well deserves its specific name, and perhaps the most popular of them all in 1868. *Ampelopsis Veitchii* from Japan. According to strict nomenclature it should stand as *Vitis tricuspidata*, thus depriving it of its popular name. These are only a tithe of the plants which British gardeners owe to this enterprising firm. A full list will be found in the *Hortus Veitchii* published in 1906. Into the varied interests of the firm Harry Veitch threw himself with characteristic zeal, and for the last half century his interest in horticulture never flagged. So early as 1866 he was on the Committee of the International Horticultural Exhibition and Botanical Congress held in London. The profits from it went to purchase the Lindley Library which was vested in the Royal Horticultural Society, an institution which owes a great deal of its success to Sir Harry, who long served on its Committee, and whose popularity was shown by the presentation portrait from the brush of Sir H. Riviere, which now hangs in the Council Room. The second great International Horticultural Exhibition took place in 1912 when the King conferred upon him the honour of knighthood. Sir Harry also received the honour of the Crown from the King of the Belgians, the French Legion of Honour, and the Isidoe St Hilaire Medal, the United States' George R. White Gold Medal, and the Royal Horticultural Society awarded him the Victorian Gold Medal of Honour. For many years he had been the Chairman of its Orchid Committee, and in 1918 he became its Treasurer. He was a wise and generous helper in philanthropic works associated with his own calling, and he was also a willing worker in wider spheres, for he served on the board of the British Orphan Schools. His long life was a round of service, in which nothing useful was neglected. His own immediate neighbours as well as the world at large have much to be grateful for in having such an example set as that which was shown by the life and labours of Sir Harry Veitch. His place on the roll of our members will be difficult to adequately fill. There is an excellent account and portrait in the *Gardeners' Chronicle* for July 12, 1924.

WARMING, Professor JOHANNES EUGEN BULOW, Emeritus-Professor of Botany of the University of Stockholm 1882-5 and of Copenhagen 1885-1911. Born at Mano in Jutland, November 3, 1841; died April 2, 1924. In 1892 he published *Lagoa Santa*, a pleasing account of his excursions over the lowlands into the mountains of Brazil, but his earlier work included investigations on the Podostemaceae. The work by which he is best known to taxonomists is the *Botany of the Faeroes* which, written in English, extends to a thousand pages. In this he had most able co-adjutors in our valued member, Prof. C. H. Ostenfeld, and in F. Borgesen who worked out the marine Algae. His publications were voluminous and it is mainly through him that Plant Ecology came into its own. His English edition of the *Oecology of Plants*, edited by I. B. Balfour and Percy Groom, appeared in 1909, and a later edition of this popular work under the title of *Pflanzengeographie* by Warming and Graebner appeared in 1918. See biographical note in *Nature* 684, 1924, by Dr W. G. Smith.

Webster, George. Born at Aldborough, near Boroughbridge, in the East Division of the West Riding of Yorkshire, June 22, 1851; died at Merton Cottage, York, August, 1924. He was past president of the York and District Field Naturalists' Society, of which he had been a member for 50 years. For a long period he was connected with the well-known horticultural firm of Messrs Backhouse, York, where he obtained a good general knowledge of plants Since his retirement past seven years ago he had devoted much time to the Botanic Garden in connection with the Yorkshire Philosophical Society at York. Webster was not a great contributor to botanical literature, but his services to Yorkshire Botany are acknowledged in Lees' *Flora of North-West Yorkshire*. He became connected with our Club about 1873 and so was one of our oldest existing members. He was especially interested in Roses and Brambles and a fairly regular contributor of specimens to the Club up to 1892, his remarks showing that he was a good discriminating botanist. I had corresponded and exchanged specimens with him since 1876. We may quote from a letter I received from him in 1903 after Mr Bailey had sent out his circular resigning the Secretaryship and showing the financial statement from which it appeared that some well-to-do members were many years in arrears of payment. He says, "In the first place please accept my share of thanks for your coming forward to steer the old Exchange Club in its need. It is good of you to tax yourself so far, for we should evidently be soon upon the rocks. Owing to pressure of business-work, during late years I have been a bad contributing member. I, however, like to keep up my connection by subscribing and always receive the Reports with great interest. In Mr Bailey's circular the amount of the subscription was questioned and I expressed my willingness to pay an increased one if necessary to keep the Club going. The statistics showing outstanding subscriptions reveal a very poor example of honour among members. It is, however, not an isolated occurrence as in our York Nat. Soc. we have just the same leakage, and have in consequence to pay a collector 5 per cent. to call upon the members. Our York Church Institute has the same type of members requiring a paid collector. At one of the meetings a " Revd." had in my opinion the audacity to get up and say he had not paid on principle as he had not been personally called on. He, however.

had not neglected to use the Library and Reading-Room where posters always drew attention that Subscriptions were due. Personally I am glad that the Club is retaining its individuality, with no merging into the Watson Club. I think if such an amalgamation took place we should lose some of the scientific tone now attached to our corporation. I do not think I have been in Oxford since I called on you some years ago, but I had a valued Moss correspondence with Mr H. Boswell up to the time of his being laid aside." It may be added that Webster had a good knowledge of Mosses and Hepatics. He was much respected at York and was churchwarden of St Martin-cum-Gregory in that city for many years. Webster was one of those hard-working unassuming field-botanists which the intensive education of the twentieth century usually fails to produce, but who in their time and generation have offered an example to their fellows, have proved of service to many seekers after botanical facts, and have often laid good foundations of accurate observations which have permanent value.

WHELDON, JAMES ALFRED. Born at Northallerton, Yorkshire, May, 1862; died at Orrell Park, Liverpool, November 28, 1924. It is not often that a single individual attains to a good all-round knowledge of British plants, both phanerogamic and cryptogamic, and at the same time becomes a recognised authority on genera belonging to both groups. Such an one was J. A. Wheldon. At an early age he showed a love for natural history, probably inherited from his father, James Wheldon, who was a good botanist and ornithologist. Young Wheldon was educated at Cleveland College, Darlington, and was afterwards apprenticed to the business of a pharmacist in that town. After passing his qualifying examination in 1884, he served for some time as chemist's assistant at Scarborough, and afterwards at Brighton. During his stay in these coast towns he was very favourably placed for the study of maritime and other bird life and he gained a very good knowledge of ornithology. He made a large collection of living and stuffed birds, and attained considerable skill as a taxidermist. For some years previous to this he had collected flowering plants, mosses, insects, and land and fresh water shells, and now added seaweeds and leaf-fungi. In 1886 he commenced business on his own account at York, and here he became secretary of the York and District Field Naturalists' Society. He devoted much of his spare time to the study of mosses, and in 1888 compiled the "York Catalogue of British Mosses," a work which filled a want at the time. He had only been in business at York four years when a disastrous fire destroyed his stock in trade and also most of his valuable Natural History collections and books. He removed from York and in 1891 obtained the post of pharmacist to the medical staff at H.M. Prison, Liverpool. Here he remained until his retirement from the prison service in 1922, at which time he was senior pharmacist in the service and was decorated with the Imperial Service Medal. After his removal to Liverpool botany became his favourite study. His first work was on the mosses of the Mersey Province. He compiled lists of the species, looking up and verifying the old records where possible, by personal examination of herbaria and by work in the field. He also explored much new ground. The results of these investigations were published in the *Journal of Botany;* Cheshire, South Lancashire, and West Lancashire being treated of in turn. It was in connection with the bryology of the latter vice-county that the writer of this notice had the good fortune to make his acquaintance. We soon became close friends and met during our holidays for botanical excursions. In 1899 I mentioned to him that I had been accumulating notes during the previous twenty years on the flora of West Lancashire, with a view to possible publication sometime, and asked him if he would care to collaborate with me. He at once fell in with the idea and took up the work with enthusiasm. During the following eight years most of our spare time was devoted to the Flora. Neither of us was resident in the vice-county, but we visited it on every possible opportunity. Most of our excursions were confined to week-ends, prolonged sometimes from Friday to Tuesday. The beautiful dales and fells, the limestone hills and woods, the lowland peat bogs, and the long and varied coast line were explored at all seasons of the year. Besides the work with the flowering plants and ferns, many hundreds of specimens of mosses, hepatics and lichens were collected and afterwards examined with the microscope, correct determination being of course not always possible in the field. To my colleague belonged the credit of doing almost all this microscopic work. The very rich variety of forms of Harpidioid Hypna and Sphagna which West Lancashire contains rendered an intensive study of these groups necessary, and

Mr Wheldon entered into the task with great ardour. One of the results of his work was the publication of a valuable paper entitled "The North of England Harpidia" (*Naturalist* 65-92, 1902). He corresponded for many years with British and foreign students of this difficult and polymorphous group, and in 1920-1921 he published in the same journal a "Key to the Harpidioid Hypna" which embodies the results of his ripe experience. Hardly less important than his work on the Harpidia was his work on the Sphagna, upon which group he soon became the foremost British authority. In 1917 he wrote "A Synopsis of the European Sphagna, indicating the species, varieties and forms occuring in the British Isles, with descriptions of many of the forms." This was compiled from Warnstorf's "Sphagnologia Universalis," but contains descriptions of a number of new varieties and forms first described and named by himself. The "Flora of West Lancashire" was published in 1907, after which the authors felt free to go further afield. We visited the Highlands of Scotland at various times and also Westmorland and the Isle of Man. Several papers—mostly referring to cryptogams—were the result, perhaps the most important being one on the "Lichens of Perthshire," published as a supplement by the *Journal of Botany* in 1915. Mr Wheldon did much other work on British lichens, describing several new species, and at the time of his death had in preparation a long paper on the lichens of the Isle of Man. This is being prepared for the press by his son, Mr Harold J. Wheldon. One of the most original and valuable of J. A. Wheldon's papers was entitled "Social Groups and Adaptive Characters in the Bryophyta" (*The Lancashire Naturalist*, 1911). This was an important contribution to oecological botany and has been widely quoted from. Altogether Mr Wheldon's works and articles in journals, written either by himself alone or in conjunction with others, number considerably over a hundred. They include papers on phanerogams, mosses, hepatics, lichens and fungi. He wrote the account (as yet unpublished) of the genus *Erythraea* for the *Cambridge Flora*. In conjunction with Mr W. G. Travis he named and described the var. *condensata* of *Parnassia palustris*, found on the Lancashire sand dunes; and the same authors were the first to show that the *Helleborine* which grows on these dunes and which had been considered to be a form of *H. latifolia* was *H. viridiflora*. Mr Wheldon

J. A. WHELDON.

was one of the founders of the Liverpool Botanical Society, of which he was several times president. He was also one of the founders of the Moss Exchange Club—now the British Bryological Society. He had the unique distinction of having acted as Distributor for all three of the leading British botanical exchange clubs, viz., for phanerogams, mosses, and lichens. He accumulated a very fine herbarium consisting of over 32,000 specimens, all the above groups being well represented. Mr Wheldon was elected a Fellow of the Linnean Society in 1901, and in 1923 had the honour of being elected an Associate of that Society. In the same year the honorary degree of M.Sc. was conferred upon him by the University of Liverpool. Of Mr Wheldon's personal character the writer can speak from long experience. We had been most intimate friends for over 25 years. He had an unassuming, genial manner and a natural affability, which endeared him to all who were privileged to know him. Although he had little leisure time at his disposal he was always ready to help others by naming specimens or in other ways. During the last few months of his life he suffered from an incurable disease which caused him much pain. This he bore with great fortitude. His mind was active to the last, and within two hours of his passing away he was able to read with pleasure a reprint of his last paper, "Additions to the Scottish Sphagna," published in the *Journal of Botany*. He had been a widower for nine years. He leaves two sons and one daughter. The elder son, Mr H. J. Wheldon, is a capable fungologist and author of "A Key to the British Agaricineae."

A. Wilson.

One cannot allow the death of my dear friend to pass without offering my sincere tribute of respect and sympathy. His loss to British Botany is very great and although in later years he devoted himself to the Mosses and Lichens yet we could not grudge his divergence for he made such a conspicuous success in his study of the difficult groups of mosses. I first met him at Liverpool many years ago, and then saw how much respected he was by those under whom he served, for at that time he was pharmacist to the Liverpool Prison. But he was more than that, for his knowledge of the subject was much valued by the medical attendants at that gloomy place. Wheldon was a kindly person to all who met him and certainly his devotion to Botany was stimulated by the repellent adjacent atmosphere. He brought out a good tentative Alien Flora of the neighbourhood, and did much at the Botany of the Isle of Man. One may say that field workers long felt it was high time that some recognition of his botanical service should be made. And it was a never ceasing regret that Oxford did not reward the great service he did in naming our large Lichen and much of our Moss collection. Manchester could not well move since he belonged to a neighbouring city. However, if tardily, he received from Liverpool the degree of M.Sc., which was as much a source of pleasure to his friends as it was to himself. Working—not climbing—was more in his way. He had been an active member of our Club for many years and he was one of our most loyal friends. He wrote a most kindly and appreciative letter on the publication of the *British Plant List* and a humorous communication, with a sketch of himself, reading the 1919 Report, seated in his arm-chair and emitting from his pipe clouds of smoke. He says he has had his nose buried in it nearly all day. He gave his paper on *Erythraea* to the *Cambridge Flora* and wrote, "I have been kept all these years expecting it to appear each year. Had a brief résumé been printed, plants might have been distributed, opinions evoked, and the final result much improved. It is 5 or 6 years wasted which might have been spent in improving one's idea before final publication." Despite the painful character of his mortal disease his son tells me that he read our last Report through the day before he died. He left a very large herbarium of over 15,000 sheets of phanerogams and about 17,000 specimens of Mosses, Hepatics and Lichens, his collection of Sphagna and the Harpidioid Hypna being especially rich. The whole has been acquired by the National Museum of Wales at Cardiff where it will be preserved intact. G. C. Druce.

NEW COUNTY AND OTHER RECORDS.

Abbreviations.—*Rep. B.E.C.* = *Report of the Botanical Society and Exchange Club*; *Wats. B.E.C.* = *Report of Watson Botanical Exchange Club*; *Gar. Chron.* = *Gardeners' Chronicle*; *Nat.* = *The Naturalist*; *Journ. Bot.* = *Journal of Botany*; † = Adventive;

*=New County Record (in the case of adventive plants this is only rarely added); ! placed after a plant signifies that the compiler has seen a specimen; ! placed after a locality that the compiler has seen it there; × placed between two scientific names means that the plant is a hybrid; 52, &c., numbers following a county, refer to the Watsonian vice-county in *Topographical Botany*; [ ] enclosing a record mean that confirmatory evidence is needed, or that the plant is not British.

We are under great indebtedness to Dr A. Thellung for his most kindly help in determining so many of the adventive species and also to the Director of the Royal Botanic Gardens, Kew, to Mr J. Fraser, Mr W. O. Howarth, Mr C. E. Salmon, Rev. H. J. Riddelsdell, and others who have rendered critical assistance.

†1 (3). Clematis Viticella L. Hayling Island, S. Hants, Biddiscombe.

†2. Thalictrum aquilegifolium L. Bank at Edradour, E. Perth, Webb.

†13. Anemone japonica S. & Z. Mayals, Glamorgan, Webb.

16. Adonis annua L. Near Sleaford, Lincs, Miss Landon; one specimen in a cornfield five miles west of Winchester, Rt. Hon. H. Baker.

20. Ranunculus acris L., sub-var. minutiflorus Dr. Grassy side of cart-track leading to Cantelupe Farm between Haslingfield and Grantchester, Cambridge, Shaw. Var. rectus Bor. Penzance. Cornwall, Thurston. Det. Druce.

23. R. Lingua L., the glabrous plant. River Corrib, below Meulo, Galway, Mrs Evans.

†25 (2). R. aconitifolius L. Near Sleaford, S. Lincs, Miss Landon; near Lumsden, N. Aberdeen, Wilson.

†27. R. arvensis L., var. inermis Koch. Near Sleaford, Lincs, Miss Landon.

40. R. heterophyllus Weber, var. triphyllus (Wallr.). Post-

combe, Oxon, DRUCE. Var. SUBMERSUS. Bedale, N. Yorks, BUTCHER, teste PEARSALL.

42. R. BAUDOTII Godr., var. CONFUSUS Godr. Stone Abbotsham, N. Devon, 1894, H. A. EVANS, teste PEARSALL.

46. R. HEDERACEUS L. On Carmarthen Van, at over 2000 feet, WEBB.

47. R. FICARIA L., var. SINUATA Horw. Sloping bank of the Taff, Cardiff, Glamorgan, Miss VACHELL.

51. HELLEBORUS VIRIDIS L. Near Pont Ynyseven, Carmarthen, Mrs BEGG.

†52. H. FOETIDUS L. Garvestone, Norfolk, Mrs RUSSURIM; Sibton Abbey Wood, Suffolk, REDGROVE.

54. AQUILEGIA VULGARIS L. Truly wild at Kingthorpe, near Pickering, N. Yorks, FLINTOFF; †Coille Voullin, Pitlochry, E. Perth, WEBB; bank between arable fields, Wymondham, E. Norfolk, CLARKE.

60. DELPHINIUM AJACIS L. St Helen's Spit, Isle of Wight; Dunwich Priory, Suffolk, Canon VAUGHAN; Warlingham, Surrey, BEADELL.

†61. D. ORIENTALE Gay. Woodhall Spa, Lincs, 1922, ALSTON. Det. THELLUNG.

†63. D. CONSOLIDA L. Woodhall Spa, Lincs, 1917-22, ALSTON. Probably PANICULATUM Hort., THELLUNG.

†68. ACONITUM NAPELLUS L. Sibton Abbey Wood, Suffolk, REDGROVE.

†79. PAPAVER SOMNIFERUM L., var. HORTENSE (Huss.). St Aubin's, Jersey, and as a very small-flowered plant on the foreshore at Sumburgh, Zetland, DRUCE; in potato fields Moulin, E. Perth, WEBB.

†86. P. ORIENTALE L. Chadlington, Oxon, DRUCE.

†86 (2). P. BRACTEATUM Lindl. Mayals, Glamorgan, WEBB.

†90. GLAUCIUM CORNICULATUM Curt. Norwich, CLARKE; Woodhall, Lincs, ALSTON.

†98. CAPNORCHIS CANADENSIS Dr. (DICENTRA). Newlands Vale, Cumberland, H. P. BUNELL.

†100. CAPNOIDES SOLIDA Moench. Headbourne Worthy, N. Hants, H. L. GREEN.

†101. C. LUTEA Gaertn. Strathardle, E. Perth, WEBB.

104. FUMARIA CAPREOLATA L., var. BABINGTONII Pugs. Melto, Woodbridge, Suffolk, there for many years, SHAW.

125. RADICULA AMPHIBIA × ISLANDICA. Linley, Salop, 1874, Miss PALMER in *Hb. Druce.*

*126. R. ISLANDICA Dr. Olna Firth, Zetland, DRUCE.

128. BARBAREA VERNA Asch. Fishguard, Pembroke, DRUCE; Woodbridge, Suffolk, SHAW. Det. THELLUNG.

130. B. ARCUATA Reichb. Nampean, Cornwall, THURSTON.

†138. ARABIS ALPINA L. Maryborough, Lanark, GRIERSON. Sp. non vidi.

140. A. PETRAEA Lam., var. GRANDIFOLIA Dr. Stob Bhan, at head of Glen Nevis, Westerness, R. J. PEALLING.

142. CARDAMINE PRATENSIS L., var. FLORE PLENO. Melmerby, Cumberland, MASON.

145. C. FLEXUOSA With. Near Clayhithe Lock, Cambridge. SHAW.

†155. ALYSSUM ALYSSOIDES L. Burgh Castle, E. Suffolk, SHAW.

†157. A. INCANUM L. Ditch, Pitlochry, E. Perth, WEBB; Woodhall, Lincs, abundant, 1917-24, ALSTON.

162. DRABA MURALIS L. North Devon, D'URBAN, *in litt.*; on an

old wall, Chickerell, Dorset, Miss Roper; wall top north of Kilpedder, Co. Wicklow, Brunker.

169. Cochlearia micacea E. S. Marsh. On the ridge of Snowdon overlooking the Llanberris Pass, Carnarvon, Druce. This I first found there many years ago and Marshall agreed to the name.

†184. Sisymbrium altissimum L. Hassocks, Sussex, Lady Alethea Buxton; Melmerby, Cumberland, Mason; Moulin, E. Perth, Webb; Cardiff Docks, R. L. Smith. Det. Thellung.

†185. S. orientale L. Hoar Cross, Stafford, D. Meynell; Melmerby, Cumberland, Mason: on railway between Beck Hole and Grosmont, N. Yorks, Flintoff; Woodbridge, Suffolk, Shaw. Det. Thellung.

†186. S. pyrenaicum L. (austriacum Jacq. acutangulum DC.). Routh Park, Cardiff, R. L. Smith. Det. Thellung.

†187. S. Loeselii L. Cardiff [CC. 49], Druce.

189. S. officinale Scop., var. leiocarpum DC. Evenedine. Hereford, F. Day.

†191 (3). S. brachycarpum (Rich.) Thell., f. eglandulosum Thell. Ware, Herts, A. W. Graveson. Det. Thellung.

†198. Erysimum repandum L. Sherborne St John, Hants, Boys. Det. Thellung.

†200. Conringia orientalis Dum. Poldhu Beach, Cornwall, E. T. Peery, ex Thurston.

†202. Camelina sativa Cr. Walney Isle, S. Lancs, Miss M. Cobbe; Routh, Cardiff [CC. 30], Druce.

†202 (2). C. microcarpa Andrj. Airdrie, Lanark, 1923, Grierson. Det. Thellung.

†209. Brassica Tournefortii Gouan. Barry, Glamorgan, R. L. Smith. Det. Thellung.

†212. B. elongata Ehrh., var. armoracioides. At Grosmont, N. Yorks, 1923, Flintoff. Det. as a sub-sp., Thellung.

†218. B. JUNCEA Coss. Colchester, DRUCE; Lanark, GRIERSON. Det. THELLUNG.

†222. B. GALLICA (Willd.) Dr. Garden-weed, Stansteadbury, Miss TROWER; Southwick, Sussex, Miss COTTIS. Det. THELLUNG.

†225. DIPLOTAXIS ERUCOIDES DC. Abundant at Barry and Cardiff and quite naturalised. Shown me by MELVILL and SMITH.

226. D. TENUIFOLIA DC. In two different forms at Hayling Isle, S. Hants, RAYNER.

†227. D. MURALIS DC. Goathland, York, FLINTOFF.

†228. ERUCA SATIVA Mill. Hayling Isle, S. Hants, BIDDISCOMBE.

232. BURSA (CAPSELLA) ANGLICA (E. At.). Yardley Gobion, Northants, DRUCE.

232. B. BATAVORUM (E. At.). Portmadoc, Carnarvon, and extending into Merioneth, DRUCE.

232. B. BREMENSIS (E. At.). Christchurch, S. Hants, RAYNER.

232. B. BRITTONII (E. At.). Chadlington, Henley, Oxon, DRUCE.

232. B. CONCAVA (E. At.). Finchingfield, Essex; Scousburgh, Zetland [also at Palma in Majorca], DRUCE.

232. B. DRUCEANA (E. At.). Swaythling, S. Hants, RAYNER; St Ouen's, Jersey, DRUCE.

232. B. GALLICA (E. At.). Southampton, S. Hants; Woodstock, Oxon, DRUCE.

232. B. GERMANICA (E. At.). Aberdeen; [Oldensee, Denmark] DRUCE.

232. B. LUTETIANA (E. At.). Scousburgh, Zetland; [Fano, Denmark], DRUCE. New to Britain.

232. B. MEDITERRANEA (E. At.). Christchurch, S. Hants [No. 3 & 4], RAYNER.

232. B. ODONTOPHYLLA (E. At.). Llanberris, Carnarvon, DRUCE. New to Britain.

232. B. PATAGONICA (E. At.). Ballater, S. Aberdeen, DRUCE.

232. B. TURONIENSIS (E. At.). Hynam, W. Gloster, DRUCE & GAMBIER-PARRY; [Fano, Denmark], DRUCE.

233. CORONOPUS DIDYMUS Sm. Welbeck, Notts, GOULDING.

239. LEPIDIUM PERFOLIATUM L. Andover, N. Hants, HILLARD; Headley, N. Hants, Miss GWATKIN, ex RAYNER.

†241. L. NEGLECTUM Thell. Gasworks, Hitchin, Herts, LITTLE; Truro, Cornwall, BORLASE, ex THURSTON; Coatbridge, Airdrie, Lanark, 1923, GRIERSON. Det. THELLUNG.

†247. L. VIRGINICUM L. Mayals, Glamorgan, 1921, R. L. SMITH. Det. THELLUNG.

†247 (4). L. DENSIFLORUM Schrad. Cardiff, Glamorgan, DRUCE, MELVILL and SMITH; Walney Isle, S. Lancs, Miss A. B. COBBE; Colchester, 1921, BROWN; Truro, THURSTON. Det. THELLUNG.

†247 (5). L. BONARIENSE L. Bristol, 1923, N. SANDWITH; Boscawen Park, Truro, Cornwall, THURSTON.

†247 (31). L. RAMOSISSIMUM A. Nels. Clarkeston, Cornwall. 1923, THURSTON. Det. THELLUNG.

252. IBERIS AMARA L. Oolite quarry, Dundry Hill, N. Somerset, BROWN.

†255. VOGELIA PANICULATA Horn. Walney Isle, S. Lancs, Miss A. B. COBBE.

†262. BUNIAS ERUCAGO L. Woodhall, Lincoln, 1917-24, ALSTON.

†263. B. ORIENTALIS L. West Wycombe, Bucks; Byfleet, Surrey, DRUCE. Distributed this year.

†266. RAPISTRUM PERENNE (L.) All. St Philip's, Bristol, 1922, SANDWITH. Det. THELLUNG.

†268. R. RUGOSUM All. Eastbourne, Pevensey, E. Sussex, D. P. MURRAY.

†286. RESEDA ODORATA L. Foreshore, St Aubin's, Jersey, DRUCE.

(All the Violas are named by Mrs Gregory.)

293. VIOLA SYLVESTRIS Kit., var. PUNCTATA Dr. Centurion's Copse, Bembridge; near Gatscombe, 1875; near Newport, 1867; Apes Down, 1869; Loughlane, 1869; Isle of Wight; Crab Wood, Winchester, cleistogamous form, 1875, STRATTON; Froyle, N. Hants, Canon VAUGHAN.

294. V. RIVINIANA Reichb., var. DIVERSA Greg. Staplers, Isle of Wight, STRATTON. f. MINOR Greg. Fitful Head, Zetland, DRUCE. Var. NEMOROSA (Neum.) Standen Lane Copse, Isle of Wight, 1912, STRATTON. × RUPESTRIS. Ditchley, Oxon, DRUCE.

295. V. RUPESTRIS Schmidt, var. GLABRESCENS Neum. Fitful Head, Scousburgh, Zetland, DRUCE. × CANINA. Lea of Setter, Zetland, DRUCE.

296. V. CANINA L., var. ERICETORUM Reichb. Staplers, Isle of Wight, 1878, STRATTON; Kingsley, N. Hants, Canon VAUGHAN. Var. PUSILLA Greg. Hayling Isle, S. Hants, 1909, Canon VAUGHAN; Snowdon, Carnarvon, Laxo, etc., Zetland, DRUCE: Gullane, Haddington, Miss I. M. MARTIN. Var. SABULOSA Reichb. Snowdon, Carnarvon, DRUCE; Garforth, N. Yorks, BUTCHER, teste Miss ROPER. × LACTEA. Gravelly heath, Staplers, 1869; Recketts Copse, Freshwater, Isle of Wight, STRATTON.

298. V. ODORATA L., var. DUMETORUM (Jord.). Apes Down, near Newport, Isle of Wight, 1867, STRATTON.

299. V. HIRTA L., var. FOUDRASII (Jord.). St Boniface Down, Isle of Wight, 1875, STRATTON, as *calcarea*. Var. PROPERA Gillot. Alton, N. Hants, Canon VAUGHAN. × ODORATA. Newport, 1867. Longlane, Staplers, Apes Down, Isle of Wight, STRATTON.

300. V. CALCAREA Greg. Garforth, N. Yorks, BUTCHER, teste Miss ROPER.

301. V. EPIPSILA × PALUSTRIS. Horningford Withy Bed, Isle of Wight, 1869, as *palustris*, STRATTON; Short Heath, Selborne, N. Hants, Canon VAUGHAN. f. GLABRESCENS A. & G. Stow Bardolph, LITTLE in *Wats. B.E.C.* 1919.

(All the Pansies are named by Dr Drabble.)

†302. V. CORNUTA L. Banks of the River Otter, Devon, 1892, Miss WALKER.

303. V. AGRESTIS Jord. Wool, Dorset; Pyrford, 1917, DRUCE; Hindhead, Surrey, C. BAILEY; Wilbarrow Hill, Beds and Herts, 1903; Frilford, Berks; Banbury, Oxon; Denham, Bucks, 1902; Oxney Lode, Northants, 1900, DRUCE; Hertford, ANSELL; Bodorgan, Anglesey, DRUCE; Tilston, Cheshire, as *Déséglisei*, 1900, W.-DOD; Sandscale, L. Lancs, LUMB; Coldstream, Berwick, DRUCE; Killin, Perth, FRASER. × HORTENSIS. Frilford, Berks, DRUCE.

303. V. ARVATICA Jord. Bexhill, E. Sussex, H. L. GREEN; Twinstead, Essex; W. Wycombe, Bucks; Eye, Northants, DRUCE; Swanston, Edinburgh, 1857, *Hb. Bell.*

†303. V. DESEGLISEI Jord. Bix, Charlbury, Oxon, DRUCE.

303. V. DERELICTA Jord. Aldbourne, Wilts, Miss TODD; Berechurch, N. Essex, DRUCE; between Stromness and Sandwick, Orkney [No. 2425], as *segetalis*. E. S. MARSHALL.

303. V. GRACILESCENS Jord. Probably this, Drummore, Wigtown, DRUCE.

303. V. LEJEUNEI Jord. Alford, N. Aberdeen [No. 7171]; Isbister, Scousburgh, etc., Zetland, DRUCE.

303. V. LEPIDA Jord. Nateby, N. Lancs, WHELDON; Ambleside, Westmorland, R. TUCKER; Bantry, Lincs, 1884, WEBSTER; Forres, Elgin, as *tricolor*, C. BAILEY; Ballater, S. Aberdeen, DRUCE.

303. V. LLOYDII Jord. St Helier's, Jersey; Hanslope, Bucks; Aldborough, Suffolk, DRUCE; Rainford Moss, S. Lancs, as *carpatica*, WHELDON, see *Rep. B.E.C.* 112, 1904; Galashiels, Selkirk, DRUCE.

Var. insignis Drabble. Hoy, Orkney, Druce. A hybrid of this at St Helier's, Jersey, 1850, *Hb. Piquet.*

303. V. obtusifolia Jord. Noirmont, Jersey, 1851, Piquet; Alresford, N. Hants; Hursley, S. Hants; Ambarrow, Berks; Moulsford, Berks [No. 5222]; Stow Bedon, Norfolk; Tackley [No. 361], 1905, Oxon; Harleston, 1874, Evenley [V. 79], Caistor, Hunsbury Hill, Northants, Druce; Manchester, Bailey; Spiggie, Zetland, Druce; Belfast, Kennedy.

303. V. ruralis Jord. Littlestone-on-Sea, Kent; St Lawrence, Isle of Wight, Druce; Selham, W. Sussex [2679], Marshall; Odiham, N. Hants, 1878, Miss Palmer; Gangsdown, Oxon; Cosgrove [V. 53], Ashton [4184], Northants, Druce; Lighthorne, Warwick, 1851, Miss Palmer; Lichfield, Stafford; Larne, Antrim; Galashiels, Selkirk, Druce.

303. V. segetalis Jord. Wrington, Somerset, Nuneham [Q. 74], Oxon; Beaumaris, Anglesey; Drummore, Wigtown; Selkirk; Strath Carron, W. Ross, Druce.

303. V. subtilis Jord. Aldbourne, Wilts, Miss Todd.

303. V. variata Jord. Bexhill, Sussex, H. L. Green; Brampton, Cumberland, Druce; Stonehaven, Kincardine, Bailey; Tongue, Alltnaharra, W. Sutherland, Druce; Stromness [2424], Orkney, Marshall, named by him *V. arvensis* × *tricolor*; Bay of Quoys, Orkney, Druce. Var. sulphurea. Odiham, N. Hants, Miss Palmer.

308. Polygala serpyllifolia Hose. In varying colours from Lumsden, N. Aberdeen, W. Wilson.

309. P. vulgaris L. Exceptionally beautiful plants at Rosslare, Wexford, perhaps under var. *Ballii* Ostenf., Mrs Wedgwood.

309 (2). P. Babingtonii Dr. Ben Evenagh, Londonderry; Horn Head, Donegal, Trapnell.

310. P. dubium Bellynck. Kenmare, Kerry, 1890, Druce. Var. dunense (Dum.). Aberfraw, Anglesey, Druce; Aberafan, Glamorgan, Riddelsdell.

318. DIANTHUS DELTOIDES L. Near Snelsmore Common, Berks. Col. J. SAUNDERSON.

†331. SAPONARIA VACCARIA L. Near Parkstone, Dorset, H. J. WADLOW, ex Bourn. Nat. Sc. Soc.; Walney Isle, S. Lancs. Miss M. COBBE.

332. S. OFFICINALIS L., var. HIRSUTA Wierzb. Llanfoist, Monmouth, WADE.

343. SILENE ANGLICA L. Woodbridge, Suffolk, SHAW; Berechurch, N. Essex, DRUCE.

†344. S. QUINQUEVULNERA L. Tackley, Oxon, W. EVETTS.

†345. S. PENDULA L. Long Meadow, Cambridge [No.49], SHAW. Det. THELLUNG.

*360. LYCHNIS DIOICA L. Orton Waterville, *Hb. Marchioness of Huntly.*

368. CERASTIUM ALPINUM × VULGATUM = C. SYMEI Druce. Stob Bhan, Westerness, R. J. PEALLIN.

370. C. VULGATUM L., var. SERPENTINI Dr. Wenlock Edge, Salop, DRUCE and Lady J. LEGGE.

†386. ARENARIA MONTANA L. Welbeck, Notts, GOULDING.

405. SAGINA CILIATA Fr. Kenn, S. Devon, Miss TODD.

410. SPERGULA SATIVA Boenn. Cardiff Docks, 1924, DRUCE; *Llantarnam, Monmouth, WADE; Mendip, near Charterhouse, N. Somerset, SANDWITH.

413. SPERGULARIA SALINA Presl. Plentiful at Colchester. BROWN.

414. S. ATHENIENSIS A. & G. Fort Regent, Jersey, in some plenty, DRUCE.

†419. CLAYTONIA PERFOLIATA Donn. Snelsmore, Berks, Col. SAUNDERSON; by the railway, Grosmont, N. Yorks, FLINTOFF; Gerrard's Cross, Bucks, Miss M. COBBE.

424. ELATINE HEXANDRA DC. Pond at Worplesdon, Surrey, BIDDISCOMBE.

430. HYPERICUM MONTANUM L. Pexton Moor, N. Yorks, FLINTOFF.

435. H QUADRANGULUM L. (MACULATUM). Gilwern, Brecon, WADE. Var. EROSUM Schinz. Llanrwst, Carnarvon, DRUCE.

*435 (2). H. DESETANGII Lam. Sturdys Castle, Oxon, 1925, DRUCE.

†447. LAVATERA THURINGIACA L. Woodhall, Lincs, 1917-24. ALSTON.

452. MALVA SYLVESTRIS L., var. LASIOCARPA Dr. Barry Docks, Glamorgan, DRUCE; a curious form, presumably of this species, with nearly entire leaves, Sharpness, Gloster, Miss TODD. Additional specimens would be very welcome.

†452 (2). M. NICAEENSIS All. Truro, THURSTON; Cardiff, MELVILL and SMITH. Det. THELLUNG.

†454. M. PUSILLA With. Shalford, Surrey, CHASE. Forma PILOSA. Oakley, N. Hants, RAYNER. Type at Bowling Distillery, Dumbarton, 1923, GRIERSON.

†456. M. PARVIFLORA L. With glabrous carpels, Edenbridge, Kent, Mr JUSTICE TALBOT. In *Bab. Man.* it wrongly says that the carpels meet with a toothed edge. That is a character of *M. pusilla* With. Bowling Distillery, Dumbarton, GRIERSON; Old Croft, Shalford, Surrey, 1923, CHASE.

†458. M. CRISPA L. Maryborough, Lanark, GRIERSON.

(The above Malvae have been named by Dr Thellung.)

†475. GERANIUM VERSICOLOR L. Meifod, Montgomery, Miss FLORA RUSSELL.

†476. G. NODOSUM L. Haveley, Middlesex, Mrs CHAMPNEYS; Goonbell, Cornwall, THURSTON; Besilsleigh, Berks, Miss WALKER.

†479. G. PHAEUM L. Coed Colonel, Menai, Anglesey, WEBB.

†479 (2). G. Endressi Gay. Goonbell, Cornwall, Thurston.

485. G. rotundifolium L. Hassocks, E. Sussex, Miss Cottis; Llanelly Station, Carmarthen, Webb; Woodbridge, E. Suffolk, Shaw; Henley, Oxon, Druce.

488. G. Robertianum L., *var. celticum (Ost.). Limestone hills, Llyn-llech Owen, Glamorgan, 1922, Hamer.

†512. Impatiens parviflora DC. Paxton Park, Hunts, 1881, *Hb. Marchioness of Huntly.*

†513. I. glandulifera Royle. Luxuriant on the banks of the Erme River near Modbury, Devon, R. M. Milne; Gilwern, Brecon, Wade; Kelston, Gloucester, Shaw; on rubbish at Marlborough, Wilts, G. Pearson.

†528. Lupinus nootkatensis Donn. Bayswater Tips, Blackpill, Glamorgan, Webb.

†529. L. angustifolius L. St Aubin's, Jersey; Berechurch, Essex, Druce; Stanway, Essex, Brown.

533. Genista anglica L., var. subinermis R. & F. Lumsden, N. Aberdeen, W. Wilson, and merging into type at Kynance, Cornwall, B. King.

539. Ulex minor Roth. Growing at Thornton Dale, N. Yorks. Found by Mr J. Green. See *Naturalist* 356, Dec. 1924, ex Flintoff (n. 398, 417).

†548. Trigonella Foenum-graecum L. Worcester, D. Hamer; Newport, Isle of Wight, Mr Long, ex Rayner; Grimsby, Lincs, S. J. North.

†555. T. Besseriana Ser. Gloucester Docks, Rev. J. H. Adams.

†568. Medicago falcata L., var. tenuifoliolata Vuyck. On the shingle, Minehead Warren, Somerset, W. Haddon, ex W. D. Miller; Aberdovey, Merioneth, Mrs Debenham; Woodhall, Lincs, abundant 1917-24, Alston; Trafford Park, Lancashire, H. Britten.

†572. M. TRUNCATULA Gaertn. Bradford, Yorks, CRYER; Barry Docks, Cardiff, MELVILL, distributed this year. Var. APICULATA Burn. Colchester, DRUCE.

†573. M. LITORALIS Rohde. Barry, Glamorgan, R. L. SMITH.

†575 (2). M. MUREX Willd. Barry, Glamorgan, R. L. SMITH.

579. M. HISPIDA Gaertn., var. CONFINIS Burn. Cardiff; Colchester, DRUCE.

580. M. ARABICA All. Woodbridge, Suffolk, SHAW.

†592. MELILOTUS SULCATA Desf. Newport and Ryde, Isle of Wight, Mr LONG, ex RAYNER.

†595. M. ALBA Desr. Swannington, E. Norfolk, CLARKE; Woodbridge, E. Suffolk, SHAW; *Orton, Hunts, 1878, *Hb. Marchioness of Huntly*.

†597. M. INDICA All. Forncett St Peter, E. Norfolk, CLARKE.

†608. TRIFOLIUM INCARNATUM L. Grosmont, N. Yorks, F. SNOWDON, ex FLINTOFF. Var. STRAMINEUM Presl. Midhurst, Kent, B. KING.

611. T. ARVENSE L. A curious form with small interrupted spikes grew at St Ouen's, Jersey, and I suspected some insect influence. Mr Swanton kindly determines it as being caused by *Eriophyes plicator*, var. *Trifolii*. DRUCE.

†613. T. SQUARROSUM L., probably. Barry Docks, Glamorgan, DRUCE, MELVILL and SMITH.

†615. T. CONSTANTINOPOLITANUM Ser. Falmouth, Cornwall, SANDWITH.

†615 (2). T. DIFFUSUM Ehrh. Bristol, SANDWITH.

619. T. STRIATUM L., var. ERECTUM Gasp. Dawlish Warren, S. Devon, W. K. MARTIN.

620. T. SUBTERRANEUM L. The wet season seems to suit this

plant for Mr E. THURSTON and Dr DEVIS found a specimen on Par Sands which measured 18 inches in diameter.

628. T. REPENS L., var. RUBESCENS Seringe. Still at Tresco, Scilly, teste Prof. J. PERCIVAL. Var. GRANDIFLORUM Peterm. Spiggie, Zetland, DRUCE.

†630 (2). T. ISTHMOCARPUM Brot. Baptist Mills, Bristol, SANDWITH.

*638. T. FILIFORME L. Melmerby, Cumberland, MASON.

†644. LOTUS SILIQUOSUS L. First found well established in Berkshire by V. MURRAY in 1912 (*Rep. B.E.C.* 315, 1913) and still there in 1924. See H. Ridley in *Journ. Bot.* 1924. It was shown to me by Dr Herbert Smith last July on a grassy slope above the Thames near Henley, but on the Berkshire side of the river. It must have been established for some years as it was plentiful over many square yards. Near Forest of Bere Farm, abundant, Captain WHITEHEAD, 1886, specimen in *Herb. Canon Vaughan.* It was first noticed in Hants and as a British alien (*Rep. B.E.C.* 14, 1875) from the waste side of a field at Ashley near Stockbridge, F. J. WARNER, and near Sparsholt, F. STRATTON, who says it is well established (*Journ. Bot.* 179, 1875 and *Fl. Hants* 115). The Rev. E. ELLMAN writes that last September he has found it near Bath in Gloucestershire in great quantity in pasture land. About twenty to thirty years ago the land was hand-cultivated for potatoes and manured with barley refuse, when the plant came up and has since much increased. Here it is, he says, thoroughly and permanently established, chiefly on clay, and also on oolitic limestone. DRUCE.

648. L. TENUIS Kit. Hungerford, Berks, beautiful specimens, Major BATES VAN DE WEYER; Woodbridge, W. Suffolk, in two distinct forms, SHAW; Colchester, DRUCE.

†*650. L. ANGUSTISSIMUS L. In a sandy field at Byfleet, Surrey, Lady DAVY. An interesting occurrence. The field was manured some years ago with shoddy waste.

†650 (10). HOSACKIA AMERICANA Piper. Hythe Quay, Colchester [2226], BROWN. Det. Kew.

†651. GALEGA OFFICINALIS L. Ryde, Isle of Wight, Mr LONG, ex RAYNER.

†652 (5). COLUTEA ARBOREA L. St Helen's Spit, Isle of Wight, 1893, Canon VAUGHAN.

†666. CORONILLA VARIA L. Owselbury, N. Hants, H. L. GREEN; Woodhall, Lincs, 1917-24, ALSTON.

†670 (2). ORNITHOPUS ROSEUS Desf. Berechurch, N. Essex, DRUCE. It is still plentiful and was in beautiful flower last November in the field where Lady Davy found it near Byfleet in Surrey.

680. VICIA OROBUS DC. Near Blaen Coal Farm, Nantgwyllt Radnor, WEBB.

†681. V. VILLOSA Roth. Swaythling, S. Hants, RAYNER; Fforest Foch, Glamorgan, WEBB; Tiverton, Devon, amongst corn, 1923, DOWNES. f. GLABRA Thell. Edlington, Lincoln, 1923, ALSTON.

†683. V. DASYCARPA Ten. Woodbridge, Suffolk, SHAW; Weybridge, Surrey, 1923, Lady DAVY; Colchester, BROWN; Barry Docks, Glamorgan, R. L. SMITH; Cardiff, DRUCE. Det. THELLUNG.

†686. V. CALCARATA Desf. Hythe Quay, Colchester, with 687. V. BITHYNICA L., †690. V. NARBONENSIS L. and var. SERRATA, 691. V. LUTEA L., in several forms, †694. V. PANNONICA L., †701. V. PEREGRINA L., †720. LATHYRUS ANNUUS L., †723 (2). L. HIEROSOLYMITANUS Boiss., †724. L. OCHRUS L., †732 (2). PISUM HUMILE Boiss., and other adventives from the adjacent maltings, most of which have been found previously by G. C. BROWN.

691. V. LUTEA L. Swaythling, S. Hants, RAYNER; Christchurch, S. Hants, Mrs ROTHWELL; Fforest Foch, Glamorgan, WEBB; Norwich, CLARKE; Lihou, Guernsey, W. H. JONES; Colchester, BROWN; Byfleet, Surrey, Lady DAVY. Det. THELLUNG. Var. CAERULEA Archang. Lydd, E. Kent, W. H. KEW.

698. V. ANGUSTIFOLIA Roth, var. UNCINATA (Desv.). Chinnor, Oxon, 1923 [AA. 299], DRUCE. Var. ALBA. Barry Docks, Glamorgan, DRUCE; Kettleness Cliff, North Yorks, 1923, FLINTOFF,

705. V. TETRASPERMA Moench, var. TENUISSIMA Druce. Godmersham, E. Kent, Hon. ELIZ. LEGGE.

706. V. GRACILIS Lois. Near Haslemere, W. Sussex, Preb. R. J. BURDON; University Farm, Cambridge, SHAW.

†707. LENS LENS (L.) Karst. Biggar Station, Lanark, GRIERSON.

†721. LATHYRUS CICERA L. Plentiful at Colchester, October 1924, DRUCE and Misses TROWER. Det. THELLUNG. Barry, Glamorgan, SMITH.

†722. L. SATIVUS L. Riddings, Coatbridge, Lanark, GRIERSON. Det. THELLUNG.

†723 (2). L. HIEROSOLYMITANUS Boiss. Colchester, October 1924. DRUCE and Misses TROWER. Det. THELLUNG.

†731. PISUM ARVENSE L. Common as a relic of cultivation, white and pink, throughout Dunfarsghy neighbourhood, Donegal. TRAPNELL.

†734 (10). GLYCINE SOJA Sieb. & Zucc. in Abh. Akad. Muench iv., ii., 119, 1843. Alien, Asia. Avonmouth, N. SANDWITH.

†738 (2). PRUNUS CERASIFERA Ehrh. Sloughton, Leicester, BEMROSE.

(The alien Leguminosae have been named by Dr Thellung.)

761. RUBUS IMBRICATUS Hort. Wraxall, N. Somerset, July 1924, BROWN.

*777. R. VILLICAULIS Koehl. Fingrinhoe, N. Essex, BROWN.

791. R. SCHLECHTENDALII Weihe. Wraxall, N. Somerset, July 1924, BROWN, teste RIDDELSDELL.

*809. R. CINEROSUS Rogers. Berechurch, N. Essex, BROWN.

844. R. PALLIDUS Weihe. Grange, Borrowdale, Cumberland. H. H. HARVEY, teste RIDDELSDELL.

851. R. Purchasianus Rogers. Crowell, Oxon, Druce.

872. R. dumetorum Weihe, var. ferox (Weihe). Stowe, Staffs, H. Evans.

895. Potentilla argentea L. Cardiff, Glamorgan, Melvill and Smith.

†896. P. intermedia L. Christchurch, S. Hants, Mrs Rothwell and Rayner; Leicester, ex *Leic. Mus.*; Leckwith, Glamorgan, R. L. Smith. Det. Thellung.

†906. P. norvegica L. Woodbridge, Suffolk, Shaw; Newport, Isle of Wight, Rayner; Mayals, Glamorgan, Webb; Whitehaven, Cumberland, Miss M. Cobbe. Det. Thellung.

907. P. Sibbaldi Hall. f. Sgurr Mhor, Fannich, W. Ross, Lady M. Watney.

909. Alchemilla alpestris Schmidt. Bein Garbh, W. Sutherland, Druce.

909 (2). A. glomerulans Buser. Lochnagar, S. Aberdeen, at 3000 ft., Druce.

†921. Poterium canadense A. Gray. In a meadow at Droxford, N. Hants, Rayner.

927. Rosa canina L., var. Wolley-dodiana. R. senticoa W.-D., not of Acharius, which teste Crépin is a *glauca* form. Pool Bottom, Oxon; Llandudno, Carnarvon, 1924, Druce.

928. R. aspernata Déség., f. globosa Wolley-Dod. Highnam, Gloucester, Gambier-Parry and Druce.

929. R. verticillata Mérat, var. litigiosa. I think this species. Only once previously recorded from Britain, teste Wolley-Dod. Hunsbury Hill, Northants, 1878, Druce. But see *British Roses*.

942. R. omissa Déség. Falting Park Copse, Isle of Wight, Rayner, teste W.-Dod.

†952 (7). R. RUGOSA. Gravel pit in the hills beyond Alness, E. Ross, WEBB.

Some Roses which were collected by Professor Percival and named by Mr J. G. Baker, Lt.-Col. Wolley-Dod has identified as follows:—

927. R. DUMALIS Bechst. Freeholders' Wood, Yorks.

932. R. DUMETORUM Th., var. CANESCENS, f. HEMITRICHA. East of Preston, 1884, named by Baker *R. sphaerica*. Var. CALOPHYLLA, Freeholders' Wood, named as *obtusifolia*.

932. R. DUMETORUM Th., f. SEMIGLABRA W.-D. Preston, named as *lutetiana;* from Freeholders' Wood, named as var. *frondosa*, and from the same place named as *arvatica*. Var. URBICA. To this probably belongs Baker's *incana* from the same Wood, Yorks, v.-c. 55.

934. R. GLAUCA Vill., var. REUTERI. Wensleydale, Yorks, 1884. Var. SUBCRISTATA, f. ADENOPHORA. Thoresby, Wensleydale, Yorks, named as *subcristata* Baker.

935. R. CORIIFOLIA Fr. Wensleydale, Yorks, type 1887; do. Freeholders' Wood.

940. R. TOMENTELLA Lem. Wensleydale, Yorks, 1887. Named *frondosa* by Baker.

941. R. SCABRIUSCULA Winch, probably. Weston, Suffolk, named by Baker *subglobosa*.

942. R. OMISSA Déség. Freeholders' Wood. Named *mollissima* by Baker. Near var. SUBERECTA. Freeholders' Wood, named by Baker, *scabriuscula*.

†958. PYRUS HYBRIDA (L.) Ehrh. (*P. fennica* Bab.). Abbot's Hall Park, Shalford, Essex, 1886, Canon VAUGHAN. See *Rep. B.E.C.* 502, 1918.

†959. P. INTERMEDIA Ehrh. A solitary planted tree at Llanberris in beautiful flower when the members were there last June. It grew near a house not far from the railway at the lower lake. Specimens were sent from the same place later on by Miss TODD.

*962. P. LATIFOLIA Syme. Kilkenny, Wexford, Carlow, STELFOX and PHILLIPS. See *Ir. Nat.*, December 1924. New to Ireland.

†965. CRATAEGUS AZAROLUS L. On Durdham Down, W. Gloster,

Brown and Wade. Mr J. White thinks that like *Rhamnus Alaternus* it may be bird-sown there.

966. C. monogyna Jacq., var. pteridifolia Loud. Byfleet, Surrey; Penrhos, Anglesey, Druce.

967. C. oxyacanthoides Thuill., var. microphylla Druce. Pilgrim's Way, below Gatton, Surrey, Wolley-Dod.

971. Cotoneaster Cotoneaster (L.) Karst. Existing in small quantity on the Orme's Head. One was glad to see a specimen growing in the rock-garden there. It is to be hoped that collectors will be satisfied by seeing it and allow the native specimens to have a protracted "close time," since only five individuals are known to survive.

†972 (2). C. microphylla Wall. On rocks of the old quarries, Bourton on the Hill, Gloster, V. C. Murray; abundant on the Great Orme and in Llanberris Pass, Carnarvon, Druce.

†972 (3). C. Simonsii Baker. Fegla Fawr, Barmouth, Merioneth, D. A. Jones.

†973. Amelanchier canadensis L. Blackdown, W. Sussex, R. J. Burdon. Det. Fraser.

982. Saxifraga granulata L., flore pleno. Naworth, Cumberland, 1886, H. P. Bunell; in two places, Newcastle, Co. Down, one in a wood growing by an avenue far away from a garden, the other on a bank at The Downs under a Laburnum, Colonel H. Nugent Head. Probably a relic of cultivation in both cases. Thought by the authors of the *Cybele Hibernica* to be doubtfully indigenous in Co. Down.

983. S. caespitosa L. The true plant in the classic Glen Spean locality, Westerness, F. J. Foggitt, v. sp.

988. S. stellaris L., with three-valved capsule. Durness, W. Sutherland, Trethewy.

989. S. UMBROSA L. Native at 1500 feet on Lugneguilla in Co. Wicklow, STELFOX, *in litt.*

†1002. RIBES NIGRUM L. Llanfoist, Monmouth, WADE.

†1003. R. RUBRUM L. Bettws, Monmouth, WADE; Pandyrodyn, Dolgelly, Merioneth, WEBB.

†1004 (3). R. SANGUINEUM Pursh. Seedlings at Christchurch, S. Hants, RAYNER.

1007. COTYLEDON UMBILICUS-VENERIS L., var. BRACTEATA Dr. St Austell's, Cornwall, THURSTON; a specimen of the type had 11 branches at Benarth Wood, Conway, Carnarvon, CLARKE.

†1012. SEDUM REFLEXUM L., var. ALBESCENS (Haw.). Costessey, Sparham, Norfolk, CLARKE.

†1014. S. SEXANGULARE L. Littlehampton, Kent, Mrs JESSOPP.

†1016. S. ALBUM L. Blackford Hill, Edinburgh, F. W. SANSOME; Coed-y-paen, Monmouth, WADE.

†1018. S. DASYPHYLLUM L. On the walls of Portchester Castle, S. Hants, 1907, Canon VAUGHAN.

1045. LYTHRUM HYSSOPIFOLIA L. Brackenridge Coup, Lanark, 1923, GRIERSON. Det. THELLUNG.

1050. EPILOBIUM LAMYI F. Schultz. Brambridge, S. Hants; *near Reading, Berks, WALLIS, ex C. E. SALMON in *Journ. Bot.* 336, 1924; Henley, Oxon, DRUCE. = *E. canescens* (Döll), not of Endlicher or White, contains the older trivial. Near Uppingham, Rutland, J. S. L. GILMOUR. Mr C. E. Salmon agrees to the determination of the Oxford plant.

†1065. OENOTHERA ODORATA Jacq. Glyn Neath, Glamorgan, WEBB; Bradford, Yorks, CRYER.

†1070. OE. TENELLA Cav. Hythe Quay, Colchester, BROWN. Det. THELLUNG.

†1072 (2). CIRCAEA CANADENSIS Hill (INTERMEDIA). Lignant

Valley, Cardigan; Wastwater, Cumberland, R. H. Williamson and Miss Cobbe.

1073. C. alpina L. *Hoveton, Norfolk, Nicholson's *Additions*. Particulars of the occurrence would be welcomed. Even Townsend mistook small specimens of *lutetiana* for *alpina*.

*1076. Bryonia dioica Jacq. Caldey Island, Pugsley in *Journ. Bot.* 103, 1924.

†1077. Mesembryanthemum edule L. St Helier's, Jersey, Druce; Blackpool Sands, Dartmouth, S. Devon, G. H. Douglas.

1086. Conium maculatum L. Near Peebles, R. Grierson. It differs from the common plant in the leaf-segments being much broader.

†1090. Bupleurum rotundifolium L. On clinkery ground by the Mersey at Birkenhead, Cheshire, J. Codrington; Norwich, Clarke; Robroyston, Lanark, Grierson.

†1092 (2). B. lancifolium Hornem. Riddings Coup, Lanark, 1923, Grierson. Det. Thellung.

*1099. Apium inundatum Reichb. Abergavenny, Monmouth, Wade.

†1101. Ammi majus L. Willian, Herts, 1923, H. W. Kew.

†1107. Carum aromaticum Dr. (copticum B. & H.). Eastville, Bristol, N. Sandwith; Brackenridge, Coatbridge, Lanark, Grierson. Det. as *Trachyspermum copticum*, Thellung.

1127. Anthriscus Scandix Beck. On sand, Newton Nottage, Glamorgan, Webb.

†1130. Foeniculum Foeniculum (L.) Karst. Arable field below Yaxley, Hunts, 1883, *Hb. Marchioness of Huntly*.

1137. Oenanthe Lachenalii Gmel. Rumney, Monmouth, Wade.

†1148. Archangelica Archangelica (L.) Karst. Canal-side.

Woodlesford, W. Yorks, Butcher; Spiggie, Boddam, Tolob, Zetland, Druce.

†1152. Peucedanum Ostruthium Koch. Boddam, Zetland. Druce.

1160. Daucus Carota L., forma nanus Dr. Severn beach, W. Gloster, Miss Roper.

†1165. Caucalis leptophylla L. Uxbridge, Middlesex, Miss A. B. Cobbe.

1169. C. nodosa Scop. Penmaen Rhos, Old Colwyn, Denbigh, Miss A. Wilkinson. The lower umbels were stalked.

1179. Sambucus Ebulus L. Near Potterne, Wilts, Gwatkin.

†1210. Asperula arvensis L. Norwich, Clarke.

*1225. Valerianella carinata Lois. On a brick wall near Sleaford, Lincs, Miss Landon.

1238. Scabiosa arvensis L., var. indivisa Peterm. Gray's Lane, near Ashtead, Surrey [2692], C. E. Britton; Melmerby, Cumberland, Mason. The latter is a very curious plant having very narrow, entire leaves, with the facies of *S. Succisa*. I notice a curious slip in my *List* where *intermedia* is given instead of *indivisa*.

†1240. Grindelia squarrosa Dunal. Woodbridge, Suffolk, Shaw.

†1245. Solidago ? serotina Ait., with scented leaves. Milford, Surrey, 1922, Rev. S. Laing.

1248. Bellis perennis L., with quilled ligules. York, Daltry. Var. hybrida (Ten.). Coatbridge, Lanark, Grierson. Det. Thellung as B. perennis, forma caulescens (Lej.) B. & C.

†1252. Aster Tradescanti L. Cwmbwrld, Glamorgan, Webb.

†1255. A. novi-belgii L. St Clare Road, Colchester [2153], and [2154] Abbeyfield, 1923, Brown.

1258. A. TRIPOLIUM L., var. DISCOIDEUS Reichb. Rumney, Monmouth, WADE.

1261. ERIGERON ACRIS L. Thornton Dale, on Ellerburn Banks, N. Yorks, FLINTOFF.

†1262. E. PHILADELPHICUS L. Markland Grips, Notts, 1923, GOULDING.

†1264 (2). E. BONARIENSE L. Cardiff, DRUCE, MELVILL and SMITH. Det. THELLUNG.

1265. FILAGO SPATHULATA Presl. Christchurch, S. Hants, Miss TODD.

1277. GNAPHALIUM SUPINUM L. Sgurr Mhor, W. Ross, Lady M. WATNEY. Var. FUSCUM Hartm. Lochnagar, S. Aberdeen, DRUCE.

†1287. BUBONIUM AQUATICUM Hill. (ASTERISCUS AQUATICUS Less.) Cardiff, Glamorgan, 1906, DRUCE.

†1291. AMBROSIA ARTEMISIFOLIA L. Woodbridge, Suffolk, SHAW; St George's Hill, Surrey, Miss DOROTHY EGERTON.

†1292. A. TRIFIDA L. Woodbridge, Suffolk, SHAW; Burton-on-Trent, N. WILLOUGHBY SMITH; Parkstone, Dorset, H. J. WADLOW in *Bournem. Nat. Sc. Soc.* Var. INTEGRIFOLIA. Maryborough Coup. Lanark, GRIERSON.

†1294. XANTHIUM STRUMARIUM L. Cardiff, Glamorgan; Colchester, DRUCE; Woodbridge, E. Suffolk, SHAW.

†1301 (6). HELIANTHUS LAETIFLORUS Pers. (H. SEROTINUS Tausch). Abbeyfield, Colchester, 1923, BROWN. Det. THELLUNG.

†1302. H. RIGIDUS Desf. Ipswich, BROWN; Blackpill Beach, Glamorgan, WEBB.

†1304 (5). SPILANTHES LEPTOPHYLLA DC. At Fort Doyle, Guernsey, quite established. A Brazilian species sent by C. TRAPNELL, J. R. TOMLIN, Mrs M'CREA, etc.

†1306. GUIZOTIA ABYSSINICA Cass. Reading, V. MURRAY; Mostyn, Flint, DALLMAN.

†1311. BIDENS FRONDOSA L. Cardiff, DRUCE, MELVILL and SMITH.

†1314. MADIA SATIVA Molini. Woodbridge, Suffolk [No. 17], SHAW.

†1315. HEMIZONIA PUNGENS T. & G. Luxuriant at Colchester. BROWN and DRUCE; Woodbridge, E. Suffolk, SHAW; Craiglockart, Edinburgh, PATTON.

†1317. H. KELLOGGII Greene. Woodbridge, E. Suffolk, SHAW.

1323. ANACYCLUS CLAVATUS (Desf.) Pers. Bristol, N. SANDWITH. Det. THELLUNG.

1324. A. RADIATUS Loisel. Bristol, N. SANDWITH. Det. THELLUNG.

†1325. A. VALENTINUS L. Cardiff [139], 1924, SMITH. Det. THELLUNG.

1329. ACHILLEA MILLEFOLIUM L., var. CONSPICUA Dr. Jersey; Corfe, Dorset, DRUCE; Byfleet, Surrey, Lady DAVY. As a form approaching A. SETACEA, Isle of Wight, Rayner.

†1331. A. NOBILIS L. Woodhall, Lincs, 1917-24, ALSTON; Cardiff, Glamorgan, MELVILL and SMITH.

†1338. ANTHEMIS TINCTORIA L. On rubbish, Arundel, W. Sussex, H. ROBERTS, teste THELLUNG. A hairy, paler yellow form, probably of garden origin.

†1340. A. COTA L. Riddings Coup, Lanark, 1923, GRIERSON. Det. THELLUNG.

1343. A. ARVENSIS L. Cardiff [106], SMITH. Probably, THELLUNG.

†1344 (2). A. WIEDMANNIANA Fisch. & Mey. Colchester [2025], 1922, BROWN.

†1352. CHRYSANTHEMUM MYCONIS L. Robroyston, Lanark, GRIERSON. Det. THELLUNG.

1360. MATRICARIA INODORA L., var. FLORE PLENO. Watlington, Oxon, 1923, C. SCOTT.

†1362. M. SUAVEOLENS Buch. At 1200 feet, Forest in Teesdale, Durham, BUTCHER; in abundance at Isbister, Zetland, DRUCE.

†1378. ARTEMISIA STELLERIANA Willd. Near St Aubins, Jersey, TEMPLEMAN.

†1380. A. BIENNIS Willd. Whitehaven, Cumberland, Miss M. COBBE; Christchurch, Hants, RAYNER.

†1382. A. ANNUA L. Yiewsley, Middlesex, COOPER, ex BROWN.

†1386. PETASITES ALBUS Gaertn. By railway at Bala, Merioneth, WEBB; Waltham, Leicester, BEMROSE.

†1388. DORONICUM PARDALIANCHES L. Baughurst, N. Hants, Mrs JESSOPP.

†1390. SENECIO SARRACENICUS L. Strathpeffer, E. Ross. WEBB. Sp. non vidi.

†1396. S. SQUALIDUS L., var. LEIOCARPUS Dr. On waste ground, Oulton Broad, E. Suffolk, SHAW.

†1399. S. VISCOSUS L. Railway near Colwall, Hereford, new to district 4, F. M. DAY.

1401. S. ERECTUS Trow, var. RADIATUS. Gloucester, Miss HAYWARD; ex Rev. J. H. ADAMS.

†1408. S. MIKANIOIDES Otto. Near St Catherine's, Jersey, 1924, L. ARSENE; do., 1923, N. SIMPSON.

†1411. CALENDULA ARVENSIS L. Glasgow, GRIERSON.

1422. CARDUUS NUTANS L. Ipswich, BROWN.

1425. C. TENUIFLORUS Curt. Inland at Blaencum in the heart of Glamorgan, WEBB.

1426. Cirsium eriophorum Scop., var. britannicum (Petr.) Dr. Howick, Monmouth, 1892, Shoolbred.

1427. C. lanceolatum Hill, var. hypoleucum (DC.). Upton-on-Severn, Gloster, Miss Todd, teste Thellung.

†1432. C. oleraceum Scop. Still at Burnage, S. Lancs, H. Britten.

†1439. Onopordon Acanthium L., var. viride Mich. Dewsbury, Yorks, W. B. Haley.

†1443. Mariana Mariana Hill. Weed in park, Ilfracombe, N. Devon, Miss Shute.

1446. Serratula tinctoria L., var. alpina Gren. & Godr. Wet pasture near Cwmdu Pit, Mdesteg, Glamorgan, Webb.

1449. Centaurea Jacea L., sub-sp. jungens Gugl., var. fimbriatisquama Gugl. Don Bridge, Jersey, Druce.

1451. C. nemoralis Jord. Callington, etc., Cornwall, Thurston; Henley, Oxon; Cothill, Berks, Druce. Var. diversifolia C. E. B. Wells, Crosfield, ex Nicholson *Additions;* Alton, N. Hants, Canon Vaughan. Var. subintegra C. E. B. Lambriggan, etc., Cornwall, Rilstone.

1451. C. obscura Jord. Perranzabuloe, etc., Cornwall, Rilstone; near Bridge of Don, N. Aberdeen; Ballater, S. Aberdeen, Druce.

1456. C. Scabiosa L., f. incisa C. E. B. Pool Bottom, Oxon; Llanberris, Carnarvon, Druce. Var. Gelmii Briq. Down above Leatherhead, Surrey, Britton.

†1462. C. Solstitialis L. Cornfield, Gilwern, Brecon, Wade.

†1467. C. pallescens Del., var. Hyalolepis Boiss. Baptist Mills, Bristol, Sandwith.

†1474. C. diluta Ait. Robroyston, Lanark, 1923, Grierson. Det. Thellung. C. maculosa and C. orientalis have persisted at Woodhall, 1917-24, Alston.

1477. CARTHAMUS TINCTORIUS L. Mostyn, Flint, DALLMAN; near Parkstone, Dorset, H. J. WADLOW in *Bourn. Nat. Sc. Soc.*

1480. CICHORIUM INTYBUS L. Cornfield, Gilwern, Brecon, WADE.

1483. ARNOSERIS MINIMA S. & K. Berechurch, Essex, DRUCE.

*1489. PICRIS HIERACIOIDES L. Yaxley, Hunts, 1884, *Hb. Marchioness of Huntly.*

1494. CREPIS BIENNIS L. Near Little Salkeld Station, Cumberland, MASON; Monstrevon Bridge, Queens County, Ireland, Mrs WEDGWOOD. Very luxuriant specimen.

†1495. C. NICAEENSIS Balb. Rescobie, Forfar, 1923, DRUCE. Det. THELLUNG.

1497. C. CAPILLARIS Wallr., var. ANGLICA Dr. & Thell. Llanberris, Carnarvon; Sudbury, Suffolk; Corfe, Dorset; Uxbridge, Middlesex; Stokesay, Salop, DRUCE; Sleaford, Lincs, Miss LANDON; Chapel Lane End, Newquay, 1915, as *agrestis*, C. C. VIGURS: Hayling Island, S. Hants; Inverbroom, W. Ross, DRUCE.

1502. C. TARAXACIFOLIA Thuill. Portmadoc, Merioneth, DRUCE.

1505. HIERACIUM PILOSELLA L., var. NIGRESCENS Fr. Hanslope railway cutting, Bucks, DRUCE.

†1512. H. AURANTIACUM L. Upper end of Glenfarg, Perth, FOGGITT; Saxby-Cropstone, Leicester, BEMROSE.

1522. H. PETIOLATUM Elfstr. Stob Corrie, Westerness, FOGGITT.

1523. H. GLOBOSUM Backh. Lochnagar, S. Aberdeen, DRUCE.

1540. H. SCHMIDTII Tausch. Excellent specimens by the railway at Llanberris, Carnarvon, DRUCE.

1540 (2). H. DECOLOR Ley. Found by the members of the Excursion on the Great Orme, Carnarvon in its classic locality.

1542. H. RUBICUNDUM F. J. H. Caenlochan, Forfar, 1923, DRUCE.

1547. H. SOMMERFELTII Lindeb., var. SPLENDENS F. J. H. Honister, Cumberland, Rev. H. H. HARVEY.

1568. H. PELLUCIDUM Laest. Lambridge Wood, Oxon, DRUCE; Crossthwaite, Cumberland, MASON; Topsy Pike, Ashwood Dale, Derby, Miss M. COBBE; Hillsborough Demesne, *Co. Down, STELFOX, in *Ir. Nat.*, 1924, with *H. serratifrons*, var. *grandidens.*

1588. H. SURREJANUM F. J. H. Brook, Surrey, Mrs WEDGWOOD.

1601. H. PINNATIFIDUM Lönnr. Castle Campbell, Stirling, H. A. Evans.

1607. H. MACULATUM Sm. On old pit-heaps, Midsomer Norton, N. Somerset, DOWNES.

1628. H. CANTIANUM F. J. H. Pyrford, Surrey, DRUCE.

*1630. H. RIGIDUM Hartm. Eskdale, Cumberland, Miss M. COBBE.

*1631. H. PRENANTHOIDES Vill. Churnet Bridge, Staffs, Miss M. COBBE.

1632. H. STRICTUM Fr. Glenarm, Antrim, Mr JUSTICE TALBOT.

1633. H. CORYMBOSUM Fr. Hevingham, Norfolk, Nicholson *Additions.* Var. PYCNOTRICHUM Dahlst. St John's Chapel, Durham, Rev. H. H. HARVEY.

*1638. H. UMBELLATUM L. Fenland, Yaxley, Hunts, *Hb. Marchioness of Huntly.*

1640. HYPOCHOERIS GLABRA L., var. EROSTRIS Coss. & Germ. Dersingham, Norfolk, LITTLE, *l.c.*

The following Taraxaca have been identified by H. DAHLSTEDT. They are mostly New County Records.

1645. TARAXACUM ALATUM Lindb. f. Farthingstone, Northants, 1923, DRUCE, as a modification.

1645. T. ANGLICUM Dahlst. Grendon Underwood, Bucks [AA. 54], DRUCE.

1645. T. brachyglossum Dahlst. Llanberris, Carnarvon; Bodorgan, Anglesey; Byfleet, Surrey, Druce; Wall Westcott, near Callington, Cornwall, Thurston.

1645. T. Dahlstedtii Lindb. f. Hanslope, Bucks, Druce.

1645. T. decipiens Raunk., forma. Wenlock Edge, Salop, 1924; Byfleet, Surrey, Druce.

1645. T. dilatatum Lindb. f. Woodleys, Oxford [AA. 82]; Goring, Oxford [AA. 104], 1923, Druce.

1645. T. dissimile Dahlst. Belonging to this group are plants from Tenby, Pembroke, April 1923, and Ivinghoe, Bucks, 1922, Druce.

1645. T. duplidens Lindb. f. Rozel, Jersey, June 1923, Druce.

1645. T. faroense Dahlst. Golspie, E. Sutherland, 1923; Ben Garve, Inchnadamph, Bettyhill, W. Sutherland; Cnochan, W. Ross, 1923, Druce; Black Craig, Orkney, 1923, Col. H. H. Johnston; Lerwick, Zetland, Druce.

1645. T. fulvum Raunk. Near Ranson's distillery, Hitchin, Herts, June 1922, Little.

1645. T. lacistophyllum Dahlst. Stansteadbury, Herts, Miss Trower and Druce; lane past Haye, Callington, Cornwall, Thurston; near Biddesdon, Wilts; Tenby, Pembroke, 1923; Wenlock Edge, Salop, 1924; Stanton St John, Oxon; near Bristol, W. Gloster; Pontac, Jersey, Druce.

1645. T. longisquameum Lindb. f. Woodleys, Oxon [AA. 73 and 84], 1922; site of the Bicester Aerodrome, Oxon, 1924 [BB. 20], as a forma; Chadlington, Oxon, 1923, Druce; seawall, East Mersea, N. Essex, May 1922 [2010], Brown, as a forma.

1645. T. naevosiforme Dahlst. Cnochan, W. Ross, 1923; Smoo, W. Sutherland, 1923; Silloth, Cumberland, 1923, Druce; Bay of Sandside, Graemsay, Orkney, June 1924, Col. H. H. Johnston.

1645. T. naevosum Dahlst. Silloth, Seascale, Cumberland, 1923; Ballater, S. Aberdeen, 1923; Lerwick, Zetland, 1922, Druce, as a modification.

1645. T. Nordstedtii Dahlst. Hanney, N. Essex, 1920, Druce; Wakes Colne, N. Essex [2049], 1923, Brown; Callington

Lane, Cornwall, 1923, THURSTON; Llanberris, Carnarvon, 1924; Oxwich Bay, Glamorgan, 1923, DRUCE.

1645. T. POLYODON Dahlst. Radyr, Glamorgan, 1923, DRUCE.

1650. LACTUCA VIROSA L., but with characters intermediate with L. SERRIOLA. Langley, Bucks, GWATKIN; near Cirencester, Gloster, GREENWOOD.

1655. SONCHUS PALUSTRIS L. Between North Woolwich and Barking Creek, S. Essex, abundantly, Sir RICKMAN GODLEE. Vide spec. in *Herb. Vaughan.* Haddiscoe, Rumbelow, Norfolk, Nicholson *Additions.*

1658. S. OLERACEUS L., var. CILIATUS (Lam.) Dr. Stokesay, Salop; Llanberris, Carnarvon; Portmadoc, Merioneth; Newport, Monmouth, DRUCE.

†1660. TRAGOPOGON PORRIFOLIUS L. Near Malpas, Cheshire, WADE.

1663 (10). SCORZONERA HUMILIS L. Very plentiful in the original locality near Ridge, Dorset, N. SANDWITH. The bordering fields are different in character which may account for its being confined to two meadows.

†1674. CAMPANULA RAPUNCULOIDES L. Refuse tip, Middlewich, Colchester, BROWN; escape Gilton, Hunts, *Hb. Marchioness of Huntly.*

†1676. C. PERSICIFOLIA L. Still in Thorparch Woods, W. Yorks, BUTCHER.

1692. ANDROMEDA POLIFOLIA L. Still in Chartley Moss, Staffs. Vide sp. ex Sir R. CURTIS.

1695. ERICA TETRALIX × VAGANS = E. WILLIAMSII Druce in Gard. Chron., 1911. Mr P. D. Williams, the original discoverer of this hybrid, has sent me a specimen from another plant gathered on October 14 by Miss LAVENDER WILLIAMS a mile from the original specimen.

1708. PYROLA MEDIA Sw. Gawthorp Camp, Pickering, N. Yorks, FLINTOFF.

1709. P. MINOR L. Wood near Roscrea, Tipperary, PHILLIPS in *Ir. Nat.*, December 1924.

1712. HYPOPITYS HYPOPITYS (L.) Dr., comb. nov. Thornton Dale, N. Yorks, FLINTOFF.

1713. LIMONIUM LIMONIUM (L.) Dr. Near Mucknash, Glamorgan, B. KING; Ray Island, N. Essex, DRUCE; St Osyth's Marsh, N. Essex; Southwold, Suffolk, Canon VAUGHAN. L. LIMONIUM × HUMILE = L. NEUMANNI. Hayling Isle, S. Hants, DRUCE; Arne, Dorset, N. SANDWITH.

1724. PRIMULA ELATIOR × VERIS. Near Bury St. Edmunds, Hon. Mrs EVELYN WOOD.

1743. ANAGALLIS FEMINA Mill. St Peter's, Guernsey, Mrs HICHENS.

1745. CENTUNCULUS MINIMUS L. Eskdale, Wastdale, Cumberland, Miss M. COBBE.

1750. VINCA MAJOR L. Dolrhyd Wood, Dolgelly, Merioneth. WEBB; between Hinton and Cottenham, Cambridge, SHAW.

1754. CENTAURIUM CENTAURIUM (L.) Dr., var. ELLIPTICUM (Dr.). See *Rep. B.E.C.* 569, 1919. Abundant and beautiful on the Quenvais, Jersey, DRUCE. Mr B. REYNOLDS sent me a specimen from Creux Harbour, Sark, which he thought might be *E. Monnerii* Corb. but it is not that plant.

1757. C. PULCHELLUM Druce. Aberdovey, Merioneth, Canon VAUGHAN.

1767. NYMPHOIDES NYMPHAEOIDES (L.) Dr. Syston Park, Lincs, Miss LANDON.

†1769. COLLOMIA LINEARIS Nutt. Ashton Gate, 1922; Avonmouth Dock, W. Gloster, 1924. SANDWITH.

†1779. PHACELIA PARVIFLORA Pursh. Burton-on-Trent, Derby, F. W. ANDREWS.

†1787. LAPPULA LAPPULA (L.) Dr. Truro, Cornwall, BORLAISE; Ravenglass, Cumberland, Miss A. B. COBBE.

†1789 (6). BENTHAMIA MENZIESII (Nels. & M'Br.) Dr. Sleaford, Lincs, Miss LANDON; Leigh, near Westbury, Wilts, E. JENKINSON: Goonhavern, Cornwall, THURSTON; Brackenridge tips, Lanark, 1923, GRIERSON; Biggleswade, Beds, 1923, C. COURSE and M. C. WILLIAMS, ex LITTLE. Det. as *Amsinkia*, THELLUNG.

*†1791. SYMPHYTUM TUBEROSUM L. In a copse and adjoining lane, Liphook, Hants, houses in proximity, J. A. WILLIAMS. I have queried its indigenity, but further observations would be welcome.

†1798. ANCHUSA SEMPERVIRENS L. Narborough, Leicester, BEMROSE.

*1814. MYOSOTIS REPENS Don. Filby, E. Norfolk, A. BENNETT. Queried in *Top. Bot.*

†1816. M. PYRENAICA Pourr. Mayals, Glamorgan in an orchard, WEBB, teste WADE.

1817. M. SYLVATICA Hoffm. Near the stream which comes from Snowdon at Llanberris, Carnarvon. It may owe its origin to gardens as the stream passes through part of the village, but it looks wild enough. This corroborates it as a Carnarvon plant for which county Robinson is the authority in *Top. Bot.*, though its indigenity may be doubtful. Almost all of Robinson's records for the county have been confirmed, and I have long felt that his memory has been too harshly assailed by Mr Britten. At one time Robinson was a hard-working and intelligent botanist, a writer to the *Bot. Soc. of Edinburgh* (*cf.*, a paper on the Batrachian Ranunculi), to *Science Gossip*, etc. Mr H. C. Watson must have been convinced of his bona fides and ability or he would not have accepted his county lists. On one occasion Mr Britten had an interview with him and the result was that the relations were strained, and Robinson was always referred to in an unpleasing manner. We may probably truthfully assert that his early records may be safely accepted, bearing in mind his standard of knowledge and the few opportunities he had of consulting good herbaria. Indeed, in any catalogue of plants there is always a loophole for errors. His leisure time was limited as he was a chemist by business. I am afraid he knew the " pit's seductive brink," and this may have been a gradually increasing temptation. Although chosen by Ball and Hooker to accompany them to Marocco it seems evident that on that journey he was not a success. But I could never bring myself to believe he intentionally made wrong records or in any way tried to impose on us false statements. Mr Gwatkin has sent me from Potterne, Wilts, a plant which may be *sylvatica*, but fresh specimens are desirable before putting that species on record.

†1818. M. DISSITIFLORA Baker. Woodleys, Oxon, of garden origin, DRUCE.

1821. M. VERSICOLOR Sm., var. PALLIDA Bréb. Polperro, Cornwall, RILSTONE.

†1830. CERINTHE MINOR L. Guildford, Surrey, F. CLARKE.

†1843. CUSCUTA SUAVEOLENS Ser. Growing on *Nepeta Mussini* in the Victoria Park at Cardiff. Miss Vachell kindly directed me to it last October when it was in fragrant flower.

†1844. LYCOPERSICUM LYCOPERSICUM (L.) Karst. Abingdon, Berks, DRUCE.

†1848. SOLANUM ROSTRATUM Dunal. Balford Mills, N. Essex, 1893, Canon VAUGHAN.

†1851. PHYSALIS ALKEKENGI L. Ryde, Isle of Wight, LONG, ex RAYNER.

†1851 (4). P. ANGULATA L. Baptist Mills, Bristol, SANDWITH.

†1863. VERBASCUM VIRGATUM Stokes. Aberdovey, Merioneth, Mrs DEBENHAM.

†1864 (3). V. SINUATUM L. Barry Dock, Glamorgan, 1924, R. L. SMITH.

1865. V. PULVERULENTUM Vill. Probably this, teste THELLUNG, at Cardiff. Shown me by MELVILL and SMITH, but quite untypical. DRUCE.

1867. V. NIGRUM L. A very valuable gathering was sent from near Headbourn Worthy, Hants, by H. L. GREEN. One plant had very broad and almost glabrous leaves, a second had small narrow leaves with a soft pubescence, a third was a monstrous condition in which the inflorescence had become extraordinarily compound. The pedicels were compound, and long—one inch or more—and themselves bore a capitate cluster of abortive sepaloid flowers.

†1869. V. CHAIXII Vill. Near Brighton, Sussex, H. D. ROBERTS.

†1872 (11). ALONSOA INCISIFOLIA R. & P. Winsley, Somerset, Mrs SMYTH PIGOTT.

†1873. LINARIA DALMATICA Mill. Saltersford Waterworks Lincs, Miss S. STOW; Birkdale, Lancashire, H. BRITTEN; Cardiff. DRUCE.

1873. L. LINARIA × REPENS. Cholsey Hill, ? Berks, Mr TATLOW.

*1878. L. REPENS Mill. Near Welbeck, Notts, on sandy ground near a wood far removed from any garden, GOULDING.

†1883 (3). L. RUBRIFLORA R. & C. Walls of Malling Abbey, Kent, F. CLARKE.

1884. L. SPURIA Mill., peloric form. Teversham, Cambridge. SHAW.

1893. SCROPHULARIA ALATA Gil. By the Eden at Temple Sowerby, Westmorland, Rev. H. H. HARVEY.

1894. S. NODOSA L., var. BOBARTII Pryor. Near Seascale, Cumberland, R. H. WILLIAMSON. Excellent specimens with flowers wholly yellowish green. Also from Eskdale Green, Cumberland, Miss M. COBBE.

†1896. S. CANINA L. In two different forms at Cardiff. Shown me by MELVILL and SMITH, 1924. Both are referred to this by THELLUNG.

†1899. MIMULUS MOSCHATUS Dougl. Boggy place, New Forest, S. Hants, RAYNER; Upottery, Devon, 1893, very abundant in the neighbourhood, Miss WALKER.

†1904. ERINUS ALPINUS L. On a wall at Downpatrick, Down, Col. NUGENT HEAD.

†1906 (2). VERONICA LONGIFOLIA L. Maryborough Coup, Lanark, GRIERSON.

†1906 (3). V. SPURIA L. Private roadway, Ditchling, Sussex, H. D. ROBERTS.

†1906 (5). V. TEUCRIUM L. Roadside near Ascot, Berks, Miss CLARIDGE.

1931. EUPHRASIA STRICTA Host. Holland, S. Ronaldshay, Orkney, August 1824, Col. H. H. JOHNSTON, teste LUMB.

1932. E. BOREALIS Wetts. Abundant and generally distributed in Zetland and very variable in colour and habit, DRUCE; Torquay, S. Devon, 1924, WATERFALL. Distributed this year.

1933. E. BREVIPILA B. & G. Holland, S. Ronaldshay, Orkney, August 1924 [R.N. 2776], Col. H. H. JOHNSTON, teste LUMB; St Ouen's, Jersey, 1924, DRUCE; Kirkby Stephen, Westmorland, Mrs MASON.

1934. E. NEMOROSA H. Mart., var. CILIATA Drabble. Plemont, Jersey, DRUCE; Alton, N. Hants, *Hb. Canon Vaughan;* Lurgashall, Sussex, BURDON.

1935. E. CURTA Fr. Birkdale, Lancashire, 1924, H. BRITTEN [N. 2], is var. GLABRESCENS, teste LUMB. This is also the Tickenham, N. Somerset plant, 1924, of J. W. WHITE. Urafirth, Setter, etc., Zetland; St Brelade's, Jersey, 1924, DRUCE.

1936. E. OCCIDENTALIS Wetts. Mullion, Cornwall, 1924, WATERFALL.

1939. E. MICRANTHA Fr. (GRACILIS). Tardru, Antrim, 1923, S. A. BENNETT.

1940. E. SCOTICA Wetts. New Forest, S. Hants, RAYNER; plentiful and variable in Zetland, DRUCE.

1940 (2). E. MINIMA Fries. Gairy Hill, S. Ronaldshay, Orkney [R.N. 2778], Col. H. H. JOHNSTON, teste LUMB; Clawton Holsworthy, N. Devon, H. H. HARVEY, teste PEARSALL.

1941. E. ROSTKOVIANA Hayne. Between Torpantau and the Brecon Beacons, also Craig-Fan-ddu, Brecon, September 1924, WADE; Kittow's Moor, N. Cornwall, LITTLE.

1943. E. KERNERI Wetts. Avon Gorge, Clifton, W. Gloster, 1924, WADE and BROWN; St Ouen's, Jersey, 1924, DRUCE; Keswick, Cumberland, H. H. HARVEY.

*1944. E. SALISBURGENSIS Funck. On a very steep rock ledge in a corrie at 1100 feet, Binevenagh, Co. Londonderry, TRAPNELL.

1948. BARTSIA ODONTITES Huds., var. LITTORALIS Reichb. Durness, W. Sutherland, TRETHEWY.

1960. MELAMPYRUM PRATENSE L., var. HIANS Dr. Abersychan, Monmouth, WADE; Eskdale, Wastdale, Cumberland, Miss M. COBBE. Var. MONTANUM Johnst. Goathland, N. Yorks [378], FLINTOFF, spec. not seen; Blorenge, Monmouth, WADE.

1974. LATHRAEA SQUAMARIA L. Kingthorpe, near Pickering, N. Yorks, FLINTOFF.

1976. UTRICULARIA MAJOR Schm. Stow Bedon, W. Norfolk, F. ROBINSON, ex Nicholson *Additions*.

1977 (2). U. OCHROLEUCA Hartm. Foulden, Norfolk, Nicholson *Additions*; peat bogs, Appin Moor, above Coshieville, M. Perth, HAGGART; Inchnadamph, W. Sutherland; Brou Loch, Zetland, DRUCE; Nether Wastdale and near Wastdale, Cumberland, Miss A. B. COBBE.

1982. PINGUICULA VULGARIS L. Small specimens at the outlet of Marrafield Water, Zetland, but not *P. alpina* L., DRUCE.

1988. MENTHA ROTUNDIFOLIA Huds. Waltham, Leicester, BEMROSE.

†1989. M. ALOPECUROIDES Hull. Old Colwyn, Denbigh, Miss A. WILKINSON.

1994. M. AQUATICA L., var. LUPULINA Briq. Staplers, St Helen's Green, Isle of Wight, STRATTON. Var. CAPITATA Briq: Brixton, Isle of Wight, STRATTON.

1999. M. RUBRA, var. RARAPILA Briq. Bagwich Farm, Isle of Wight, STRATTON.

2000. M. ARVENSIS L., var. OBTUSIFOLIA Briq. Pan Moor, Isle of Wight, 1867, STRATTON.

2004. ORIGANUM VULGARE L., var. ALBIFLORUM Lej. Lane near Seascale, Cumberland, HELLON; Colerne, Wilts, 1899, Miss WALKER.

2007. THYMUS PULEGIOIDES L. Alton, N. Hants, DRUCE.

2007 (2). T. GLABER Mill., var. VERTICILLATUS Lange. On roadside between Brandean and West Meon, N. Hants, September 1900, Canon VAUGHAN, as *Serpyllum*.

2008. T. LANUGINOSUS Mill., teste RONNIGER. Alton, N. Hants, DRUCE.

2008. T. PYCNOTRICHUS Ronn. Boddam, Zetland, DRUCE.

2008. T. BRITANNICUS Ronn. Aithvoe, Scalloway, Quendale, Zetland, DRUCE.

2008. T. DRUCEI Ronn. Aithvoe, Cliva Hill, Zetland, DRUCE.

2012. SATUREIA NEPETA Scheele. Cardiff Docks, DRUCE, MELVILL and SMITH; *Orton Longueville, Hunts. *Hb. Marchioness of Huntly.*

†2019 (2). SALVIA SCLAREA L. Hamble Common, S. Hants. RAYNER

2023. S. PRATENSIS L. Edge of clover field, Hungerford, Berks, Major BATES VAN DE WEYER.

†2025. S. NEMOROSA L. With S. VERTICILLATA L. Woodhall, Lincs, 1917-24, ALSTON; Silloth, Cumberland, DRUCE and WILLIAMSON.

†2029. S. HORMINUM L. Naturalised at Welbeck, 1916-17, 1922-23. It was first observed at Kirkby Notts by Thomas Clarke in 1782, R. W. GOULDING *in litt.*

2039. DRACOCEPHALUM PARVIFLORUM Nutt. Byfleet, Surrey, 1923, Lady DAVY.

2044. PRUNELLA VULGARIS L., var. NEMORALIS Beg. Lambridge Wood, Oxon, DRUCE.

†2048. SIDERITIS MONTANA L. Woodhall Spa, Lincs, ALSTON. Det. THELLUNG.

†2049. MARRUBIUM ALBUM L. Woodbridge, Suffolk; Cherry Hinton, Cambridge, SHAW.

†2049 (2). M. PEREGRINUM L. Woodhall, Lincs, 1917-24, ALSTON; Portishead, N. Somerset, 1895, Miss WALKER.

2056. STACHYS AMBIGUA Sm. Bontnewydd, Monmouth, WADE; Nampean, Cornwall, THURSTON; Eskdale, Cumberland; Manifold Valley, Staffs, Miss M. COBBE.

2056. S. SYLVATICA L., with abnormal flowers, some being regular. See *Rep. B.E.C.* 114, 1911, Knuth *Handb. Pollin.* 119, and Bartlett in *New Phyt.* 139, 1909. Near Winton, H. L. GREEN.

2059 (2). S. RECTA L. Portishead, N. Somerset, 1898, Miss WALKER.

2060. S. OFFICINALIS Trev., var. ALBA. Newton Abbot, S. Devon, C. F. COOKE.

2062. GALEOPSIS TETRAHIT L., var. NIGRICANS Bréb. Upware, Cambridge, SHAW.

†2065. LEONURUS CARDIACA L. Penmaen Rhos, Denbigh, Miss A. WILKINSON; Cardiff, Glamorgan, DRUCE, MELVILL and SMITH. Var. HIRSUTA Hornem. Woodhall, Lincs, 1917-24, ALSTON.

2068. LAMIUM ALBUM L., forma PURPUREA Dr. Basildon, Berks, Mrs WEDGWOOD.

†2069. L. MACULATUM L. Sleaford, Lincs, Miss LANDON; Groby, Leicester, BEMROSE.

2077. BALLOTA NIGRA L., var. ALBA (Thuill.). Stevenage, Herts, H. L. GREEN.

†2089. PLANTAGO INDICA L. Par, Cornwall, MEDLIN, ex THURSTON; Cardiff, Glamorgan, R. L. SMITH. Det. THELLUNG.

†2091. P. HUDSONIANA Dr. Wastwater, Cumberland, Miss M. COBBE.

2092. P. LANCEOLATA L. Miss M. A. WILSON sends from Southbourne, Bournemouth, some monstrosities of this species—(1) at the base of the main spike, axillary spikes; (2) with bracteate inflorescence presumably by division of the apical cell, and (3) with a simple melanoid spike, perhaps caused by fungal growth. She also sends four photographs of other forms found near Southport. Mr W. W. WILSON forwards from Alford, N. Aberdeenshire, a two-headed form of the same species. Var. TIMBALI (Jord.). Frilford, Berks, DRUCE, teste FRASER.

†2095. P. LAGOPUS L. St Agnes, Scilly, 1923, DOWNES.

2098. P. MEDIA L. Mr GWATKIN sends from Potterne, Wilts, a curious form simulating *major* but not coming under the var. *lanceolatiformis* Dr.

†2110. AMARANTHUS RETROFLEXUS L. Hythe Quay [2014], 1922; Yiewsley, Middlesex [2180], 1923, BROWN; Aldershot, Hants, 1924, Mrs GIBSON; Bulford Mills, Essex, 1893, Canon VAUGHAN; Long Meadow, Cambridge; Woodbridge, Suffolk, SHAW. Var. DELILEI Thell. Cardiff, DRUCE, MELVILL and SMITH; Shalford, Surrey, 1923, CORRIE CHASE.

†2112. A. albus L. Northgate St., Colchester [2015]. 1922, Brown; Cardiff, Druce, Melvill and Smith.

(All the Amaranths are determined by Dr Thellung.)

2117. Chenopodium rubrum L., var. pseudobotryoides Wats. Kinghorn Loch, Fife, Syme. Agreed to by Murr. A small form of type *rubrum* from Guernsey, 1924, Mrs M'Crea. Forma angustifolia. Kelvedon, Essex, 1889, Canon Vaughan; Slough, Bucks, 1902, Druce.

2118. C. Botryodes Sm. Still at Hayling Isle, S. Hants, Rev. E. Reynolds.

2121. C. urbicum L. Woodbridge, Suffolk; Snoreham, Essex. Shaw. Var. intermedium Moq. Hayling Isle, 1870, Stratton.

2122. C. murale L., f. microphyllum L.N.W.R. rubbish-tip, Ipswich, Suffolk [2128]; Colchester [2127], Brown.

†2123. C. opulifolium Schrad. Ely, Cambridge, Shaw. Var. mucronulatum G. Beck. Bristol, N. Sandwith. × album = C. Preismanni Murr. Shirehampton, N. Somerset, N. Sandwith, teste Murr, who says "planta uberans minus dentata." Hythe Quay, Colchester [2220], Brown; do. [AA. 897], 1924, Druce. This verges to *Borbasii*, teste Murr. Colchester, typical [AA. 896], Druce.

2124. C. album L., sub-sp. paucidens Murr. Abbeyfield, Colchester [2136], Brown; Odiham, N. Hants, Druce. Sub.-sp. viride (L.). Hythe Quay, Colchester [2141], Brown. Sub-sp. viridescens (St Am.). Abbeyfield, Colchester [2143 and 2144], Brown; do. [2138], Brown; St Ouen's, Jersey, Druce; Staplers, Isle of Wight, Stratton, the last verging to *pseudo-Borbasii* Murr. [2140], Colchester, verging to this, Murr. Colchester [2141] is a narrow-leaved form, Brown; Eastleigh, S. Hants, Miss Todd. Sub-sp. glomerulosum Reichb. Cardiff, Druce; also [AA. 895] from Colchester which by its longly acuminate leaves approaches *lanceolatiforme*, teste Murr. Druce. Sub-sp. lanceolatum Muhl. Owen Parry's Quay, Colchester [2116], Brown. Sub-sp. pedunculare (Pers.) Bert. East Medina Mill, Isle of Wight, Stratton.

2124. C. album L., type. Colchester [2137]; do. [2221], Brown; St Helen's, Isle of Wight, Stratton; Alton, N. Hants, Canon Vaughan. Var. candicans (Lam.). Freshwater, Isle of Wight, Stratton; Colchester [2133], Brown. Sub-sp. pseudo-Borbasii Murr. St Philip's, Bristol, July 1924, Druce. Sub-sp. serrato-sinuata Murr. [2145] Colchester, Brown. × opulifolium = C. Borbasii Murr. Colchester, a handsome plant growing on waste broken ground near the Quay, October 1924 [AA. 900], Druce.

2124. C. lanceolatiforme Murr. Brislington, N. Somerset, N. Sandwith; Bishopstoke, Hants, Miss Todd.

2127. C. glaucum L. Woodbridge, E. Suffolk, Shaw; Maryborough Coup, Lanark, Grierson.

†2130. C. ambrosioides L. A narrow leaved state, Stapledon, Bristol, N. Sandwith; Brackenridge Camp, New Monksland, Lanark, Grierson.

†2130 (5). C. Berlandieri Moq. [AA. 898] Colchester, October 1924, Druce.

†2131. C. striatum Kras × album = substriatum Murr. Cardiff Dock, Druce; Shirehampton, N. Somerset, N. Sandwith. Sub-sp. pseudostriatum Fritsche. Cardiff Dock, October 1924, Druce.

†2131 (3). C. hircinum Schrad. St Clare Road, Colchester [2120], Brown. Var. subtrilobum Issl. Colchester [2130], Brown.

†2135. Roubieva multifida Moq. Ryde, Isle of Wight, Long, ex Rayner; old remount camp, Swaythling, S. Hants, 1922, Rayner, as *Artemisia rupestris*. Det. Thellung.

†2135 (5). Monolepis Nuttalliana Greene. Haslemere, W. Sussex, Burdon.

†2145. Atriplex tatarica L. In great quantity at Barry Docks, Cardiff, October 1924. Shown me by Melvill and Smith. Det. Thellung.

2149. A. glabriuscula Edmondst., forma Babingtonii Dr. Turnberry, Ayr, Shaw.

2150. A. MARITIMA Hall. Turnberry, Ayr, SHAW.

2153. A. PEDUNCULATA L. has been found in an old locality on the E. Suffolk coast by Mr H. S. REDGROVE.

†2153 (10). AXYRIS AMARANTOIDES L. Woodbridge, Suffolk, SHAW; Leicester, *Leic. Mus.*; Christchurch, S. Hants, Mrs ROTHWELL, ex RAYNER; Birkdale, Lancashire, H. BRITTEN.

2157 (2). SALICORNIA DOLICHOSTACHYA Moss. Steart Isle, Somerset, H. S. THOMPSON in *Journ. Bot.* 2, 1924.

2160. S. RAMOSISSIMA Woods. Martlesham Creek, E. Suffolk, SHAW; Weymouth, Dorset, H. S. CASEY.

2163. S. APPRESSA Dum. Southwold, E. Suffolk, SHAW.

2168. SALSOLA KALI L., var. TENUIFOLIA Mey. Woodbridge, Suffolk, SHAW.

2171. POLYGONUM BISTORTA L. Llechryd, Radnor; Dolgelly, Merioneth, WEBB.

†2183. P. PATULUM Bieb. Barry, Glamorgan, DRUCE, MELVILL and SMITH. Det. THELLUNG.

†2185 (2). P. EFFUSUM Meisn. Christchurch, S. Hants, Mrs ROTHWELL and RAYNER.

2191. P. CUSPIDATUM S. & Z. Pitlochry, M. Perth; also in Glamorgan, Carnarvon, Anglesey, Brecon, Merioneth, and Flint, WEBB.

†2192. FAGOPYRUM FAGOPYRUM (L.) Karst. Hickling Fen, Lincs, M. SHARPE, ex Miss LANDON.

†2193. F. TATARICUM Gaertn. Ryde, Isle of Wight, LONG, ex RAYNER.

*2195. × RUMEX WEBERI. This is probably the *R. maximus* from Manorbier, Pembroke, recorded by PUGSLEY in *Journ. Bot.* 105, 1924.

†2199. R. ALPINUS L. Eskdale, Cumberland; Ramshaw rocks, Staffs, Miss M. COBBE.

2200. R. OBTUSIFOLIUS × PULCHER. Hitchin, Herts; Chichester, W. Sussex, LITTLE in *Journ. Bot.* 330, 1924.

*2207. R. MARITIMUS L. Near Gresford, Denbigh, D. A. JONES *in litt.*

†2210 (6). R. SALICIFOLIUS Weinm. Woodbridge, Suffolk, SHAW; Colchester, DRUCE; Walney Isle, S. Lancs, Miss M. COBBE.

†2210 (13). R. OBOVATUS Danser. Possil, Lanark, GRIERSON; Christchurch [1 & 2], RAYNER.

2215. DAPHNE MEZEREUM L. Still at Ling Ghyll, Rev. H. H. HARVEY.

†2216. HIPPOPHAE RHAMNOIDES L. Beaumaris, Anglesey, WEBB; Bawdsey, E. Suffolk, mostly planted, SHAW.

2218. THESIUM HUMIFUSUM DC. Devil's Dyke, near Cranswick, W. Norfolk, A. LUDDINGTON; Barry Docks, Glamorgan, R. L. SMITH.

†2229. EUPHORBIA VIRGATA W. & K. In a barley field near Burford, Cambridge, SHAW; near Wye, Kent, Miss COBBE; Hassocks, Sussex, H. T. ROBERTS. Var. ESULIFOLIA Thell. Ashtead [2650], Surrey, Banstead [2695], BRITTON. Det. THELLUNG.

2246. ULMUS PLOTII Dr. Sketty iska, Glamorgan, WEBB.

†2247. CANNABIS SATIVA L. Woodbridge, Suffolk, SHAW.

2250. URTICA DIOICA L., var. ANGUSTIFOLIA W. & G. Dulverton, Somerset, Miss TODD; Sheringham, Norfolk, Nicholson *Additions;* Melmerby, Cumberland, MASON. This was the form INERMIS.

†2253 (5). HELXINE SOLEIROLII Req. Mayals, Glamorgan, WEBB.

†2264. QUERCUS ILEX L. Naturalised in abundance on east side of St Boniface Down, Isle of Wight, RAYNER.

*†2267. SALIX PENTANDRA L. On River Inny, near Davidstone,

N. Cornwall, Little *in litt.*, probably planted; near Leicester, *Leic. Mus.*; as a narrow-leaved form, planted at Girlsta, Zetland, Druce.

2274. × S. Smithiana Willd. Alvington, Isle of Wight, Stratton.

2276. × S. ambigua Ehrh. A small, neat-leaved plant growing with both parents at Laxo, Zetland, Druce.

*2285. S. herbacea L. Snaefell, Isle of Man, on Skiddaw slates, Templeman. An interesting addition to the Flora.

2299. Hydrocharis Morsus-ranae L. On a moor between Freshwater and Yarmouth, Isle of Wight, 1908, D'Urban.

2300. Stratiotes Aloides L. Between Tattershall and Woodhall Spa, Miss Landon.

2301. Malaxis paludosa Sw. Wastwater, Cumberland. Miss A. B. Cobbe.

2304. Neottia Nidus-avis Rich. Thornton Dale. N. Yorks Flintoff.

2310. Goodyera repens Br. Hopeman, Moray, near the cliff edge (*Gard. Chron.* ii. 53, 1924). It was at first thought to be *Spiranthes*. See *Rep. B.E.C.* 212, 1924, where doubtless *Goodyera* (not, *Spiranthes*, as it was called) was found near Carrbridge.

2315. Helleborine palustris Schrank. High Dalby Marsh, Thornton Dale, N. Yorks [N. 365], Flintoff.

2316. H. latifolia (All.) Dr., sens lat. Stockbury, Herts, in two forms, one possibly *purpurata*, Mrs Bostock; wood in Berks, Trollope.

*2316 (2). H. leptochila (Godf.). Lambridge Wood, Oxon. Distributed this year. Near Fawley, Bucks, Druce.

2318. H. purpurata (Sm.) Dr. Woodbury Common, S. Devon, D'Urban.

2319. H. ATROPURPUREA (Rafn.). Durness, W. Sutherland, very nice specimens, A. W. TRETHEWY.

2324. ORCHIS MORIO L., var. CHURCHILLII Dr. Great Baddow, Essex. *Hb. Canon Vaughan;* Winchester, DRUCE.

2326. O. INCARNATA L., var. PULCHELLA Dr. Bally Vaughan, Clare, Mrs WEDGWOOD.

2326 (2). O. PRAETERMISSA Druce. [In three marshes north of Paris, STEPHENSON]; Winchester, Hants, H. L. GREEN; Castle Hill, N. Devon, Countess FORTESCUE; Kilmashoyne, Co. Dublin, altitude 900 feet, STELFOX; Kincardine, FRASER.

Var. PULCHELLA Dr. Loch Insh, Wigtown, Major BATES VAN DE WEYER; Gleniff, Sligo, Mrs WEDGWOOD.

× FUCHSII. Winchester [N. 3], Hants, H. L. GREEN.

× MACULATA. Hort. Stansteadbury, Herts, Miss TROWER.

2327. O. MACULATA L., vera, non Godf. Newlyn Downs, Cornwall, THURSTON; Ashdown Forest, Sussex; near Broughton-in-Furness, PEARSALL, showing great variation in colour and in size of flowers, some closely approaching the var. MACROGLOSSA Dr.; Harlech, Merioneth, D. A. JONES, thirty specimens of this gathering sent to Dr Keller of Aarau; Glyncorwg, Glamorgan, WEBB; most abundant on the sloping meadows about Llanberris and Nant Gwynant, Carnarvon, and on the hillsides above Portmadoc in Merioneth; in just such conditions as those described by Webster for his *O. maculata praecox*, Braemar, S. Aberdeen; the prevailing form over the Mainland of Zetland, DRUCE; [Common around Havre (*O. Fuchsii* not seen) P. SENAY in *Soc. Linn. Seine Marit.;* typical in Charente Valley, France, STEPHENSON; near Eschberg, Denmark and, teste *Herb Hafn.*, scattered throughout that country.]

Var. LEUCANTHA Dr. Lumsden, N. Aberdeen, W. WILSON.

2327 (2). O. FUCHSII Druce. Loch Insh, Wigtown, Major BATES VAN DE WEYER; Cheddon, E. Gloster, DRUCE.

2327 (3). O. O'KELLYI Dr. Charlbury, Oxon, beautiful specimens, POWELL. Mr A. W. Stelfox, having studied this plant on the Burren, says he has no doubt of its distinctness from albino *Fuchsii* which grows round Dublin. See note in *Ir. Nat.*, 1924. Mr Fraser reports it for Surrey.

2331. O. HIRCINA Crantz. Fulbourn, Cambridge, A. H. EVANS; near Guildford, Surrey, F. CLARKE.

2333. OPHRYS FUCIFLORA Reichb. Near Godmersham, Kent, Hon. Miss E. LEGGE.

2335. O. APIFERA Huds., var. ALBA. Near Lechlade, with *O. Trollii*, F. JONES; Benderg Bay and Killard Bank, Co. Down, E. L. LEAVER in *Ir. Nat.*, October 1924.

2336. O. MUSCIFERA Huds. Thornton Dale, N. Yorks, FLINTOFF.

2338. HABENARIA GYMNADENIA Dr., var. DENSIFLORA (Wahl.). Sawston Fen, Cambridge, SHAW.

2340. H. VIRIDIS Br. Hopeman, Moray, *Gard. Chron.* ii., 53, 1924. Claimed to be new to Moray but it is included in Gordon's *List* for that county (Elgin) in *Top. Bot.*

2343. H. BIFOLIA Br. Beaulieu, S. Hants, E. B. WILKINSON.

2350. IRIS FOETIDISSIMA L., var. CITRINA Bromf. One plant near Bath, Rev. ELLMAN.

2354. CROCUS ALBIFLORUS Kit. (VERNUS auct.). Malden, Surrey (as *C. vernus*), PUGSLEY in *Journ. Bot.* 83, 1925; pastures at Harleston, E. Norfolk, in abundance whence it was recorded in the *Bot. Guide* of 1805, W. G. CLARKE.

†2355. C. VERNUS Mill (AUREUS S. & S.). Fairy Hill, Gower, Glamorgan, WEBB.

†2361 (2). SISYRINCHIUM CHILENSE Hook. Probably this on a waste place, Christchurch, S. Hants, Mrs ROTHWELL and RAYNER.

†2377. GALANTHUS NIVALIS L. Dolrhyd Wood, Dolgelly, WADE. The same wood has also *Vinca major* so that it is probably due to planting.

†2390. ASPHODELUS FISTULOSUS L. Woodhall, Lincs, ALSTON.

2393. Allum Ampeloprasum L. Wiseman's Bridge, near Tenby, Pembroke, Wall.

2396. A. vineale L., var. bulbiferum Syme. St Peter's, Jersey, Druce.

†2399. A. roseum L. Cemetery, Falmouth, Cornwall, Mrs Jessopp. Doubtless planted; it is the var. bulbiferum.

†2401. A. triquetrum L. Well naturalised and not intentionally planted in the grounds of Sir John Ross near Killowen, Co. Down, sent by Miss L. E. Richards.

2403. A. oleraceum L. Undercliff, Isle of Wight, E. Marsden Jones and R. G. Gwatkin. Miss Todd's locality (*Rep. B.E.C.* 216. 1923) of Upton-on-Severn is probably in Worcester. The same applies to her record for *A. carinatum*.

†2406. A. paradoxum Don. Clyde Bank, Croxford, May, W. Rennie, ex Miss I. M. Hayward.

†2408. Hyacinthus comosus L. Field near Frilford, Berks, with *Silene conica*, Druce; Stadhampton, Oxon, Leslie Smith.

2417. Muscari racemosum Lam. & DC. In a new locality in Oxon at Pool Bottom about 14 miles east of the Kiddington habitat. Found in good fruit in July. It grew in aboriginal turf. There is no doubt of its being native in the county. It is remarkable how even an attractive plant like this may have for so long remained unrecorded. It should be found in similar ground in Gloster. It occurs in Hampshire in these conditions. Druce.

2422. Colchicum autumnale L. Boughrood, Brecon; Pandy, Monmouth, Webb.

2426. Juncus maritimus Lam. Ravenglass, Cumberland, Miss M. Cobbe.

2439. J. compressus L. Woodbridge, E. Suffolk, Shaw.

2440. J. Gerardi Lois. Durness, W. Sutherland, Trethewy.

†2441. J. tenuis Willd. Nether Wastdale, Miss M. Cobbe;

Lady Hall, S. Cumberland, PEARSALL; Dove Junction, Cardigan, Miss TODD; Conway river banks, Carnarvon, W. G. CLARKE.

†2450. JUNCOIDES (LUZULA) NEMOROSUM Morong, var. RUBELLUM (Hoppe). St Blazey Gate, in Wesleyan chapel yard, MEDLIN; wood at St Bees, Miss BACON, ex Dr HELLON; Ballard's Drive (dist. 4), Hereford, F. M. DAY.

2452. J. PILOSUM × FORSTERI. On a wall at Surrey, Lady DAVY.

2461. TYPHA ANGUSTIFOLIA L. Thursley, Surrey, BIDDISCOMBE; *Whitland, Pembroke, PUGSLEY in *Journ. Bot.* 105, 1924.

2486. POTAMOGETON POLYGONIFOLIUS Pourr. Cwn Bychan Lake, Merioneth, Miss TODD.

2488. P. COLORATUS Horn. Tickenham Marsh, N. Somerset, BROWN.

2516. RUPPIA ROSTELLATA Koch. Towyn, Merioneth; *Whiteness, Zetland, DRUCE.

2520. ZOSTERA MARINA L. *Whiteness, Zetland. New as the type, DRUCE.

†2525. APONOGETON DISTACHYUM Thunb. Keston Pond side, Kent, Miss MARJORIE BOSTOCK; pond at foot of Sussex downs, Miss COTTIS.

†2528 (3). CYPERUS DECLINATUS Moench, var. LIMBATUS. Bradford, Yorks, CRYER.

*2529. ELEOCHARIS UNIGLUMIS Schultes. Arne, Dorset, N. SANDWITH.

*2561. CAREX VESICARIA L. Moor between Langport and Muchelney, S. Somerset, DOWNES.

2575. C. FULVA Host. Blackdown, Shapwick Peat Moor, Somerset, W. D. MILLER.

2577. C. OEDERI Retz. St Ouen's, Jersey, DRUCE; Garw Fechan, Glamorgan, WEBB.

2581. C. ORNITHOPODA Willd. Miller's Dale and Cresbrooke Dale, Derby, Rev. D. P. MURRAY.

2593. C. LIMOSA L. Rannoch Moor, Argyll, Lady DAVY. A form with broader leaves and longer glumes approaching *magellanica* but perhaps best referred to the var. *planifolia* Kohts.

2600. C. ELATA All. Kelvedon, Essex, Mrs CAMPBELL.

2609. C. LACHENALII Schkuhr. In Dickie's station on Lochnagar, S. Aberdeen, at 3600 feet. Found there by me in 1892, and again this year by Miss VACHELL and others in July, and by myself and Mrs WEDGWOOD in August last, but then past its best. It was associated with its hybrid *C. helvola* which was in considerable quantity and reached a higher altitude, DRUCE.

2615. C. PAIRAEI Schultz. Keynsham, N. Somerset, N. SANDWITH; Highnam, W. Gloster, N. SANDWITH and GAMBIER PARRY.

2623. C. DIVISA Huds. Recorded as *chaetophylla* from alluvial soil by Avon, opposite the Hotwells, Bristol, H. S. THOMPSON (*Wats. B.E.C.*). It goes to the type not the variety. True *chaetophylla* Steud. was found in Richmond Park, Surrey, 1921, by Mr J. FRASER.

†2632. PANICUM CRUS-GALLI L. Newnham, Cambridge; Woodbridge, E. Suffolk, SHAW; Colchester, BROWN. Var. BREVISETUM Doell. Headley, Miss GWATKIN, ex RAYNER. Det. Kew.

†2636. P. MILIACEUM L. Swaythling, S. Hants, RAYNER.

†2637 (2). P. LAEVIFOLIUM, var. AMBOENSE Hackel. Netley and Swaythling, S. Hants, RAYNER. Det. DRUCE; Bradford, Yorks, CRYER.

†2648 (2). SORGHUM HALEPENSE L. Byfleet allotments, Surrey, Lady DAVY. Det. DRUCE.

†2651. PHALARIS CANARIENSIS L. Woodbridge, Suffolk, SHAW; Wilsford, Wilts, Viscount GREY; Grutness, Zetland, DRUCE.

†2653. P. MINOR Retz. Exeter, Miss TODD; Woodbridge, Suf-

folk, SHAW; Colchester, abundant, DRUCE and BROWN; Cardiff; Cothill, Berks, DRUCE.

†2654. P. PARADOXA L. Kennington, Berks, GAMBIER PARRY; Truro, Cornwall, THURSTON, panicle rather lax; Woodbridge, Suffolk, SHAW; Bowling, Dunbarton, 1923, GRIERSON. Det. THELLUNG.

2673. PHLEUM PRATENSE L., var. LONGIARISTATUM Parn. Southampton Docks, S. Hants, Miss TODD; Great Orme, Carnarvon. DRUCE.

Var. INTERMEDIUM (Jord.). Alwalton, Hunts, 1892, *Hb. Marchioness of Huntly.*

†2683. AGROSTIS VERTICILLATA Vill. Printon and Walton on the Naze, Essex, on new road, SHAW; Cardiff and Colchester, DRUCE.

2686. A. SETACEA Curt. Cwm Garw Fech, Glamorgan, a non-limestone locality, WEBB.

2690. POLYPOGON MONSPELIENSE L. Southwick, Sussex, in plenty, Lady DAVY; Barry Dock, Glamorgan, SMITH.

*2692. P. LITTORALIS Sm. In considerable quantity round some pieces of water in the Cardiff Docks, Glamorgan, Miss VACHELL, MELVILL and SMITH where I was shown it last October. It may have come in with other ballast or it may have actually been produced there as both its assumed parents, *P. monspeliense* and *Agrostia alba*. are growing with it. In India it seems to occur in places without *P. monspeliense*.

2694. CALAMAGROSTIS CANESCENS Dr. Killway, Bembridge, Isle of Wight, SHAW.

2698. GASTRIDIUM VENTRICOSUM Schinz & Thell. On ledges of limestone cliffs west of Port Eynon, Glamorgan, Prof. R. M'LEAN; Casewell, by the road, on limestone rocks, WEBB; Whitecliff Bay, Isle of Wight, SHAW.

2717. AVENA FATUA L., var. PILOSISSIMA Gray. Colchester, DRUCE. Var. GLABRATA (Peterm.). Cardiff, DRUCE.

†2719. A. STRIGOSA Schreb., *sub-sp. ORCADENSIS Marq., var. FLAVA Marq. St Peter's, Jersey; Zetland, plentiful, DRUCE.

†2720. A. SATIVA L., sub-sp. VERNA, var. "BLACKWINTER Marq. St Peter's, Jersey, DRUCE.

†2726. GAUDINIA FRAGILIS Beauv. Cardiff, DRUCE.

2733. PHRAGMITES VULGARIS Dr., var. FLAVESCENS (Cust.) Dr. Portishead, N. Somerset, Miss WALKER.

†2737. CYNOSURUS ECHINATUS L. Gloster Docks, Rev. J. H. ADAMS. f. GIGANTEA. Boscawen Park, Truro, BORLASE; St Ouen's, Jersey, DRUCE; Colchester, BROWN and DRUCE.

†2744. KOELERIA PHLEOIDES (Vill.) Pers. Bradford, Yorks. CRYER. Det. THELLUNG. Barry Dock, Glamorgan, SMITH.

†2747. ERAGROSTIS CILIANENSIS Vig.-Lut. Cardiff, DRUCE, MELVILL and SMITH. Det. THELLUNG.

2752. DESMAZERIA LOLIACEA Nyman. Barry Dock, Glamorgan, SMITH.

†2755. BRIZA MAXIMA L. St Blazey Cemetery, Cornwall, THURSTON.

2757. B. MINOR L. In some plenty at St Peter's, Jersey, DRUCE.

2759. POA IRRIGATA Lindm. Pettadale, Zetland, DRUCE.

2765. P. COMPRESSA L. Whitehaven, Cumberland, Miss M. COBBE.

2769. P. ANNUA L., var. PERENNANS. Colchester, DRUCE.

2773. GLYCERIA PLICATA Fr., var. DECLINATA Bréb. New Forest, S. Hants, Miss TODD.

2777. G. BORRERI Bab. Meldon, E. Suffolk, SHAW.

2790. FESTUCA AMBIGUA Le Gall. Cardiff, DRUCE.

2792. F. MYUROS L. Very luxuriant at St Anne's, Jersey.

Druce; Newport House, Countess Wear, Devon, plentiful, some specimens up to four feet high, D'Urban; Port Eynon, Glamorgan, Webb; Cornwall, Medlin; Christchurch, S. Hants, Rayner.

†2794. Bromus rigens L. Colchester, Druce; Woodbridge, E. Suffolk, Shaw; Portmadoc embankment, Merioneth, Miss Todd and Druce.

†2799. B. rubens L. Bradford, Yorks, Cryer. Det. Thellung.

*†2817 (5). B. ciliatus L. Alien, N. America. In some quantity on the banks of the Dee, near the Suspension Bridge, Chester, September 3, 1924, H. Britten. New to our *List*.

*2819. Brachypodium pinnatum Beauv., f. leiostachya Hack. Charlestown, Cornwall, W. Tresidder, ex Thurston. Det. Druce. The glumes are not hairy but only ciliate.

2831. Agropyron caninum Beauv. Neddfechan, Brecon and Glamorgan, Webb; Stowmarket, E. Suffolk, Shaw.

†2851. Hordeum jubatum L. Whitehaven, Cumberland, Miss M. Cobbe; Bradford, Yorks, Cryer.

2852. H. vulgare L. Colchester [N. 1773], 1920, Brown.

†2857 (2). Elymus sibiricus L. Tees-side, under Barnard Castle Walls, Durham, Rev. H. H. Harvey.

*2867. Equisetum litorale Kuehl. Cothill, an interesting addition to the Berks flora, Druce.

2873. E. trachyodon Braun. Still at the glen in Antrim but very rare, Mrs Wedgwood.

2875. Cryptogramma crispa Br. Still at Padell-y-Bwlch. Glamorgan, Webb.

2885. Asplenium Adiantum-nigrum L. A curious monstrosity from Johny Wood between Rosthwaite and Seatoller, Cumberland, Mason.

2908. Phegopteris Phegopteris (L.) Dr., comb. nov. Near Goathland, N. Yorks, Flintoff.

2909. P. Dryopteris Fée. Sleightholme Ghyll, N. Yorks, Flintoff.

2917. Hymenophyllum peltatum Desv. Upper Cwm Taff, Brecon, Webb.

2918. Osmunda regalis L. Durnholme, N. Yorks, Flintoff.

2919. Botrychium Lunaria Sw. Longmire Camp, N. Hants, Mrs Thompson.

†2923. Azolla filiculoides Lam. Pond near Petersfield; back water of Itchen near Bishopstoke, S. Hants, Rayner and F. Escombe.

2928. Lycopodium annotinum L. Sgurr Mhor, W. Ross, Lady M. Watney.

2929. L. clavatum L. Rudge Warren, Pattingham, Staffs, Miss Bradley, vide sp.

2934. Nitella opaca Ag., var. brachyclema Gr. & B.-W. Brou Loch, etc., Zetland, Druce.

2944. Tolypella intricata Br. Near Studley, Oxon. Sandwith.

2958 (2). Chara delicatula Br. Crumwere, Pembroke Rev. R. Tuckett. Det. Canon G. Bullock-Webster.

THE VISIT TO NORTH WALES OF SOME OF THE MEMBERS OF THE BOTANICAL SOCIETY AND EXCHANGE CLUB IN 1924.

E. VACHELL.

Delightful memories of the week spent in Jersey during the summer of 1923 led many members of the B.E.C. to look forward with great interest and pleasure to the proposed meeting in North Wales this year. From May 27th to June 2nd six most successful and enjoyable days were spent at Llanberris by about 20 keen field botanists who, under Dr Druce's guidance, were afforded exceptional opportunities of seeing nearly all the rare plants that occur in Carnarvonshire and Anglesey, and of visiting some of the most beautiful spots in the principality. Making the Royal Victoria Hotel their headquarters members were able with ease to see the rareties that grow near the shores of Llyn Padarn and Llyn Peris while expeditions by motor charabanc were organised to all the chief places of botanical interest in the neighbourhood. The party which assembled early on Tuesday morning (May 27th) enjoyed the pleasant journey along the coast to Wales, the hurried glimpses of Conway, the Great Orme's Head, Carnarvon and the distant views of the Snowdon Range, and during the evening a few enthusiasts anxious to make the most of their opportunities wandered down to the narrow strip of land between the lakes to see *Alisma natans* and *Hymenophyllum unilaterale*.

On Wednesday (May 28th) a special train conveyed the party to the highest station on the Snowdon railway. The weather was perfect and after examining the plants that grow near the summit including *Carex rigida*, *Cochlearia alpina* and *micacea*, *Saxifraga nivalis*, *Saussurea* and *Salix herbacea* and enjoying the magnificent view of surrounding country—the coast line of Carnarvon and Anglesey, the Menai Straits and the neighbouring peaks of Y Glyder Fawr, Y Glyder Fach, Y Tryfan, Carnedd Dafydd and Carnedd Llewelyn members walked back to Clowyn Station where lunch awaited them, after which a thorough search was made for rare species on the Clogwyn Du yr Arddu, one of the richest spots for alpines in the Snowdon range. These magnificent cliffs which rise to a considerable height, are composed of volcanic ash and weathered by the storms of countless centuries provide delightful ledges and niches where rare plants can find shelter and protection. After a careful search had been made along the base of the cliffs it was found that the contents of the vasculums included *Saxifraga nivalis*, *S. stellaris*, *Silene acaulis*, *Saxifraga oppositifolia*, *S. hypnoides*, *Thalictrum alpinum*, *Vaccinium Vitis-Idaea*, *Arabis petraea*, *Cerastium arcticum*, *Lycopodium clavatum*, *L. alpinum* and *Lloydia alpina*. The shores of the small lake at the foot of the cliffs were then examined and after a stiff scramble up a steep grassy slope the train was rejoined at Clogwyn Station.

Thursday (May 29th) was occupied in observing the many plants of interest that occur in the neighbourhood of Llanberris. In the morning a delightful walk along the railway bank towards Cwm y Glo provided many interesting forms and varieties of some of the commoner plants and a few of the more energetic members of the party, reaching Cwm-y-Glo station, returned with specimens of *Symphytum tuberosum* and *Hieracium Schmidtii*. During the afternoon two boatloads of enthusiasts led by Dr Druce raked up excellent specimens of *Isoetes lacustris* and *Callitriche hamulata* near the shallow shores of Llyn Padarn, while the evening walk to the waterfall not far from the hotel produced *Trollius europaeus* and *Meconopsis cambrica*.

Friday (May 30th). An early start was made by charabanc through Carnarvon and Bangor and up the grand Nant Francon Pass to Ogwen Cottage which guards the entrance to Cwm Idwal. *Lobelia Dortmanna* and other plants of interest were visited on the shores of Llyn Ogwen, but *Lloydia* was the object of the expedition, and after a hurried lunch near Ogwen Cottage which for many years past has been one of the most favoured climbing centres in North Wales, the party straggled up the rough path behind the house that leads to the shores of Llyn Idwal, and made their way slowly up the mountain side. A steep scramble up rough scree led to the cliffs which being composed chiefly of volcanic products are rich in lime and alkalies and produce a flora both varied and interesting. *Cystopteris fragilis* and *Asplenium viride* are almost hidden in the narrow cracks, while *Gnaphalium supinum*. *Vaccinium Vitis-Idaea* and *Sedum Rhodiola* find a footing on the open rock ledges. Slowly, the clouds which for some time had been dark and threatening enveloped the tops of the mountains, rain began to fall and a dense mist made it impossible to see more than a few yards ahead. All familiar landmarks were blotted out and the search was no longer for *Lloydia* but for the small cleft where *Lloydia* was known to grow; and those who failed to scramble up the treacherous screes and slippery rocks had perforce to drop out and make their way home alone as fresh difficulties arose. After a few hours a temporary rift in the enveloping mist and a few seconds' view of the surrounding country revealed the fact that the few remaining members of the party were far out of their course, high amongst rock ledge and loose stones near the top of the Glyders, a scramble that could easily have been avoided on a clear day. However the short ray of sunshine was sufficient to locate the habitat, rocks and slopes were again negotiated and before long a few specimens of *Lloydia* were found, unmistakable, but not as yet in flower. *Empetrum nigrum*, *Lycopodium Selago*, *Saussurea alpina*, *Selaginilla selaginoides*, *Oxyria digyna* and *Antennaria dioica* were also seen before the return to Ogwen Cottage where a refreshing tea was much enjoyed after the wet walk.

Saturday (May 31st) was reserved for the study of the Anglesey plants. Passing through Carnarvon and Bangor and crossing the bridge over the Menai Straits the party motored past Bodorgan where several interesting plants were observed, to Aberffraw Common, near to which is seen Llyn Coron where *Elatine Hydropiper* has been found. The plant associations of the fixed dunes were studied and specimens of *Viola Curtisii*, *Mibora verna*, etc. were obtained.

Sunday (June 1st). The long day's expedition to Pwllheli had to be abandoned on account of the heavy rain but during the afternoon it cleared sufficiently for a start to be made. Motoring up the Llanberris Pass, past Pen-y-pass and Penygwryd the beautiful valley of Nant Gwynant was entered and the shores of a small lake searched for marsh plants. The drive was then continued past Beddgelert with its interesting legendary associations through the magnificent scenery of the Pass of Aberglaslyn to Portmadoc. The bright spring colouring of the low-lying meadows, the yellow of the gorse and broom, and the purple of the first foxgloves was a sight not easily forgotten. Time did not permit of the drive being continued to Pwllheli for *Scirpus nanus* so it was decided to search for the plant nearer to Portmadoc. Unfortunately its habitat on the sandy river estuary was completely covered by the tide. A further search near Mynffordd was also unsuccessful owing no doubt to the lateness of the season.

Monday (June 2nd). Soon after breakfast the charabanc drew up for the last time in front of the Victoria Hotel and with many regrets goodbyes were said to several members of the party who were remaining behind. Driving through Bangor, Carnarvon, Penmaenmawr, Conway and Deganwy to Llandudno, the Happy Valley gardens were visited where a fine bush of *Cotoneaster* is to be seen. Then, following a winding path to the fine limestone cliffs above the town, *Helianthemum canum*, *Satureia Acinos*, *Hutchinsia petraea* and other interesting limestone-loving plants were observed. Emerging on to the flat top of the headland *Scilla verna* and *Antennaria dioica* were seen amongst the short turf and *Potentilla verna* near a row of cottages close to which *Cotoneaster vulgaris* is said formerly to have grown. The London train started early in the afternoon, so there was unfortunately not sufficient time for most of the members to reach the other habitat. Only a few, therefore, who were remaining in Wales and had only a short journey before them, dared to venture on a further expedition in order to see the plant growing under natural conditions on the cliffs. On Sunday morning Dr Druce gave a delightful and instructive address on Field Botany as a hobby—begging members of the B.E.C. to take their hobby seriously. This advice will, it is hoped, be followed carefully by everyone who heard it, and who will in all probability never forget the beauty of the short address and the extraordinary effort of memory that it entailed. Certainly Dr Druce's knowledge and his marvellous memory are an example better than any words! The week's work came to an end all too soon for although the season was late, keenness and enthusiasm overcame all difficulties. Very few plants were missed, and during the two days spent on the mountains practically all the Arctic-alpine species mentioned in the *Flora of Anglesey and Carnarvon* were seen, though not all in flower, in one or other of their known habitats.

MY FAVOURITE WILDFLOWER.

Henry S. Salt.

There are so many choice wild flowers, and such varying opinions of their respective merits, that a flower-lover must feel some hesitation in expressing a personal preference for any one of them. In a little book published a few years ago I ventured to mention several plants that have a special charm for me; and I have since had the satisfaction, in two instances, of finding my own taste confirmed by that of another writer.

One of these flowers was the Greater Stitchwort; and in reading a book by Havelock Ellis, "The Dance of Life," I was pleased to light upon a passage in which, while speaking of the rather limited knowledge which poets show of wild flowers, and their consequent tendency to celebrate only those that have pretty names, he referred to the Stitchwort as an example of undeserved neglect. "I have long cherished," he says, "an exquisite and quite common English wild flower, but have never come across a poem about it, for its unattractive name is the Stitchwort, and it is only lately that even in prose it has met (from Mr Salt) with due appreciation."

In the other case it was the Borage and Bugloss; and here I was agreeably surprised to find in the "Reminiscences" of the Rev. S. Baring Gould, a confession which almost exactly coincided with my own. "When I was a young man I picked the Bugloss and regretted it was not Borage wherewith to flavour cider-cup. Now I stand by the hedge, and drink in the loveliness of the blue, profound as an Italian sky, without any aspiration after cider-cup. In my advanced old age I really entertain more delight in the beauties of Nature and of Art than I did in my youth."

Doubtless association, either with person or locality, often plays a considerable part in one's feelings about a wild flower; in my own case, the order of plants which rejoices me most is that of the Saxifrages, owing to a long familiarity with the mountains of Cumberland and North Wales. But the particular flower which I best love is a native of the upland dales rather than of the high mountains, to wit, the Water Avens, which, though frequent enough in northern districts, is denied us—and the loss is a real one—here in the south.

The peculiar fascination which this plant has for me lies partly in the graceful and modest droop of the flower-head, but still more in its colouring, a combination of very soft and beautiful hues of rich brown, vinous red, orange, and creamy white, which has somewhat of the effect of the old stained glass that so delights one in a cathedral. I have heard it described as " dingy;" but surely there must be something amiss with the æsthetic perception which can see no more in it than that! In a pleasant old book, " The Flower Garden," by E. S. Delamer (1856), the *Geum* group is referred to as " a genus more remarkable from having been one of the favourites, the whims, the caprices, of the great Linnaeus, than for anything else. It is hard to say what in the *Geum rivale*, for instance, a British meadow weed, could so take the fancy of the Master."

Admirers of the " meadow weed " may be content to be in such good company without giving reasons for their fancy; but it seems to me that the plant is gifted with what I would call a rare *depth* of colour, which is quite a different quality from the bright tints that are possessed by many flowers. The Bastard Balm (*Melittis*), for instance, is exceedingly handsome, as everyone must admit, with its variegated petals of white and pink; but its gay colours seem to give an impression of being superficial rather than deeply engrained, as if some fairy painter had but lately passed along the lane where it grows, and lavishly laid on the pigment with a magic brush. In the Water Avens, on the contrary, sepals and petals alike are steeped and dyed in hues which, though not gaudy, have a richness, a sober radiance, that is all their own, and in the long run is more satisfying to the eye and the heart than any external brilliance can be.

I have a liking, too, for the common Avens on account of its happy relationship: it is the Herb Bennet, or " Blessed Herb," less, I surmise, for its medicinal properties than for its own good fortune in having such lovely kinsfolk. The hybrid, *Geum intermedium*, strikes me as being curious rather than beautiful: certainly, when I last saw them all three growing together by a Yorkshire roadside, it was the Water Avens itself that captivated me. It shares, I fear, the lot of the Stitchwort, in having no poet to sing its praises; yet when we consider what sort of poetry we see in the papers, it may be as well that this article should not rouse any latent singer to activity.

FLORA LONDINENSIS.

(*By kind permission of the Proprietors of "Punch," July 1924.*)

When my eyes are fairly weary of this London of to-day
I withdraw five battered folios all marbled black and grey
From their station on my bookshelves, and I read the world away
In the company of CURTIS, prince of botanists, whose word
Was the last on London's flora in the reign of GEORGE THE THIRD,
When he lived at Lambeth Marshes . . . Yes, I know it sounds absurd
But the flowers and CURTIS flourished there, the Thames was bright with Sedge,
Not a crumpled wall at Putney but had Stonecrop on its ledge;
There was Traveller's Joy at Lewisham along the turnpike hedge.
Then Toadflax throve on Temple walls and Lilies slipped their sheath
In Lord MANSFIELD's little pinewood on the way to Hampstead Heath,
And the copses out at Croydon had white Violets beneath.
Not a day went by for CURTIS without some botanic thrill,
He found Teasels down at Deptford and "on Moulsey Hurst" a Squill,
And he plucked a Twayblade Orchis from the turf of Shooter's Hill
For him the Chelsea Kingcups blew, for him the Mushrooms stood
In the pasture-lands of Islington this side of Hornsey Wood;
You can't pluck Cress on Hounslow Heath, of course, but CURTIS could.
At times "within sides of old wells" he found a Hart's-tongue fern,
And every year at Battersea he watched the brief return
Of the Poppies whose "fugacity" aroused his quaint concern.
And now his London too is fled, there's scarce a petal's trace
Of the Thames-side flowers that flourished in his Georgian year of grace,
Only weed on weed of brick-work that has over-run its place.
Yet if you can harbour CURTIS (and the elbow room he claims
Speaks itself of ampler ages) take him down and read the names
Of his blossoms and their habitats, until your fancy flames
With gable-ends and gravel-pits and lanes that gain the down,
And rushy streamlets close at hand and sylvan hills to crown
A city almost suburbless, a country-girdled town,

MENTHAE BRIQUETIANAE.

JOHN FRASER.

*MENTHA LONGIFOLIA Huds., var. WEINERNIANA Briq. Les Lab. 57, 1891 = M. WEINERNIANA Op. *M. florida* Op., not Pausets. *M. Wondraceckii* Op. A strong growing plant, attaining a height of 2-3 ft. Stem branching, thinly and shortly hairy below, shaggy above, with the internodes 2-5 cm. long. Leaves ± broadly lanceolate, tapering gradually to an acuminate point, cordate at the base, sessile or sub-sessile, green and hairy above, grey tomentose beneath, measuring 3-8 x 1-3 cm.; serratures small, acute, directed forward, or ± turned outwards, and concave on the lower side, 0.5-3 mm. deep, and 2-5 mm. apart. Spikes cylindrical, dense, interrupted below. Near Marcham, Berks, G. C. DRUCE.

× MENTHA NILIACA Jacq., var. HALLERI Briq. Parentage *M. longifolia* × *rotundifolia*. Under the hybrid *M. niliaca* come all such forms as have been described under *M. longifolia* Huds., var. *mollissima* (Borkh.), *M. nemorosa* Willd., *M. villosa* Huds., *M. gratissima* Wigg., *M. rotundifolia* Huds., *M. alopecuroides* Hull, *M. silvestris* Presl, and *M. hybrida* Schleich. Plant attaining a height of 2-3 ft. Stem stout, more or less glabrous below, and shaggy above with deflexed, grey hairs, with internodes 2.5-7 cm. long. Leaves ± broadly ovate, acute, sessile or subsessile, cordate at the base, very convex on the margins, green, hairy and rugose above, or with deeply sunk nerves, grey tomentose and soft or velvety beneath, measuring 2.5-8 x 1.5-4 cm. in surface; early leaves oblong, obtuse, thinly and shortly hairy; serratures acute, irregular, directed forward, or many of them turned outwards and concave on the lower side, 0.5-3 mm. deep, and 1-7 mm. apart. Spikes dense, cylindrical, interrupted below. Near North Leigh, Oxon, G. C. DRUCE.

× MENTHA PIPERITA Huds., var. DRUCEANA Briq., var. nov. = *M. affinis* Strail. Stem erect, flexuous, branched, red, 2-3 ft. high, very thinly hairy, with short hairs most obvious under the nodes. Leaves varying from oval to the ovate, smaller, upper ones, acute, petiolate, unequal and slightly *cuneate at the base*, the upper ones *rounded* at the base, dark green above, thinly hairy at first, soon glabrous, pale green and thinly hairy on the nerves beneath; serratures 5-10 on each margin 0.25-1.25 mm. deep, mostly directed forward, and 3-6 mm. apart. Inflorescence shortly spicate, interrupted at the base, often capitate on the branches. Flowers ♀; corolla glabrous within; calyx glabrous with ciliate teeth; pedicels glabrous.

The principal distinguishing features of the variety are the oval leaves of the main axis without auricles, the small number and small size of the serratures. Didcot, Berks, G. C. DRUCE. See *Rep. B.E.C.* 342, 1891, and *Fl. Berks* 392, 1897.

MENTHA AQUATICA L., var. ACUTA Briq. Includes forms of *M. aquatica*, var. *subglabra* Baker. Stem branched, more or less hairy, 2-4 ft. high. Leaves oval or elliptic, acute, cuneate at the base, convex on the margin, acutely serrate, thinly hairy on both surfaces, 2.5-7 x 1.2-4 cm. in area of surface; serratures acute, 0.25-2 mm. deep, and 4-8 mm. apart.

The features of the variety are the oval or elliptic, acute leaves, cuneate at the base and the acute serratures. Marston towards Water Eaton, Oxon, G. C. DRUCE; Epping Forest, Essex, 1883, J. FRASER.

Var. CAPITATA Briq. *M. aquatica* L., var. *minor* Sole. *M. capitata* Opiz. Stems simple, or more or less branched, 2-4 ft. high, rather densely hairy, with recurving hairs. Leaves *broadly ovate*, subacute or obtuse, with a very *convex* margin, broadest near the base, *rounded or subcordate* at the base; serratures numerous, generally regular, projecting somewhat, or salient, forming triangles 1-2 mm. deep, ± acute, straight or slightly convex on the lower side, and standing 3-5 mm. apart.

A common and widely distributed variety with broadly ovate leaves, rounded or subcordate at the base, and a large, capitate inflorescence. Marston, Oxon; Greenham, Berks, G. C. DRUCE; Thames banks below Staines, Middlesex, 1885; Holmwood Common, Surrey, 1916, J. FRASER.

[The older name here is *M. aquatica*, var. *minor* Sole, but it is not necessarily a small plant.—Ed.]

*Var. INCISO-SERRATA Briq. = *M. inciso-serrata* Strail. Stems more or less branched above, ± densely hairy, 2-3 ft. high. Leaves ovate, acute or sub-acuminate, with a long entire point, convex on the margin, more or less densely hairy on both surfaces, subcuneate at the base, incise-serrate, measuring3.5-6.5 x 1.5-3.5 cm. in surface area; serratures acute, salient, often concave on the lower side, often irregular, mixed with very small ones, and forming triangles 0.25-2.5 mm. deep.

The features of the variety are the ovate, acute leaves, slightly cuneate at the base, and the incised serratures. Lungmore, Berks, G. C. Druce; Reigate Heath, Surrey, 1909, J. Fraser.

*Var. Lobeliana Beck. Stems erect, slender, simple or slightly branched under the inflorescence, subglabrous below, more or less densely hairy above, 16 in. to 2 ft. 8 in. high, with internodes 2-8 cm. long. Leaves oblong-oval, occasionally lanceolate, and a few of the uppermost shorter and ovate, more or less hairy on both sides, the uppermost densely so on the underside, acute or subobtuse; petioles slender; serratures mostly small, numerous, straight or occasionally slightly concave on the lower side, 0.25-2 mm. long. In shade the leaves may be up to 8 x 3.5 cm. in surface area; in exposure they are usually 3-4 x 1-2.5 cm. Inflorescence with a medium-sized capitulum and a smaller verticillaster on the main axis, and a small capitulum on each branch.

The features of the variety are the slender stems, usually small leaves, numerous small serratures, and the rather small capitula of the inflorescence. S. Hinksey, Berks, G. C. Druce; Cobham, 1916, and Cold Norton, Surrey, 1921: R. Medway below Tonbridge, Kent, 1919, J. Fraser.

Briquet describes forms of the var. *Lobeliana* verging towards the var. *lupulina* by having some of the lower leaves subrotund; and one intermediate between var. *capitata* and var. *Lobeliana*, by having the leaves of the former and the small inflorescence of the latter.

*Var. Ortmanniana Braun = *M. Ortmanniana* Op. *M. crenato-dentata* Strail. Stem slender, flexuous, rather densely hairy, apparently simple, 12-16 in. high. Leaves small, ovate to deltoid-ovate, rounded or subcordate at the base, obtuse at the apex, crenate-dentate, hairy on both sides, the uppermost densely so, 2-3 x 1-2.2

cm. in surface area; crenatures 0.25-1 cm., deep. Inflorescence small, consisting of the terminal head and one verticillaster.

Easily recognised by the small ovate-deltoid, obtuse leaves, slender stems and small inflorescence. Near Antony, E. Cornwall (a white flowered form), T. R. Archer Briggs.

Var. lupulina Briq. = *M. denticulata* Strail. *M. aquatica*, var. *denticulata* H. Braun. Stem 16 in. to 2 ft. high, ± branched, with the internodes 4-6 cm. long. Leaves frequently rather small, broadly ovate or subrotund, obtuse or subacute, with convex margins, subcordate at the base, densely hairy on both surfaces, measuring 2-5 x 1.5-3, rarely larger; starved specimens among sand dunes may have the leaves reduced to 1-1.5 x 0.7-1.2 mm.; serratures consisting of *very numerous, small, closely placed, triangular teeth*, 0.5-2 mm. deep, acute, directed forward, and 1-3 mm. apart. Inflorescence consisting of the terminal head only, or that with one or two verticillasters.

The variety is easy to recognise by its broadly ovate, or sometimes subrotund leaves, densely hairy and furnished with very numerous triangular teeth. Braunton Burrows, N. Devon (miniature), W. Moyle Rogers; Ainsdale and Freshfield Sandhills, W. Lancashire, J. Cosmo Melvill; Isle of Wight, and E. Barming, W. Kent, 1919, J. Fraser.

[Here again H. Braun's name seems to have precedence.—Ed.]

Var. nicaeensis Briq. Stems + branched at the top or from near the base upwards, thinly hairy towards the base, more densely upwards, 2-4 ft. high, with internodes 3-11 cm. long. Leaves broadly ovate, obtuse or acute on the same or different plants, moderately hairy on both faces, rounded, truncate or sub-cordate at the base, crenate-serrate, measuring 2-5 x 1.3-4 cm. in surface area; serratures very small or shallow, but varying a little, directed forward, 0.25-2 mm. deep, rarely 3 mm., acute. Inflorescence consisting of a small or medium sized terminal head with a small, distant verticillaster on the main axis and stronger branches and one small head on each of the smaller branches.

The variety is readily recognised by the short, broadly ovate, almost deltoid leaves, shallow serration, and small size of the numerous flower clusters. Hurst, Berks, G. C. DRUCE; Sheerwater, Byfleet, Surrey, 1916; R. Medway, Maidstone, 1919, J. FRASER. Not uncommon.

Var. OBSCURA Wimm. et Grab. Stems ± branched, thinly hairy throughout, 2-3 ft. high, with internodes 2-10 cm. long. Leaves ovate obtuse, suddenly and shortly cuneate at the base, shallowly serrate or crenate-serrate, very thinly and shortly hairy on both surfaces, convex on the margin, measuring 5-6 x 1.5-3.5 in surface area, but the uppermost *very broadly ovate*, *rounded at the base*, subacute, and measuring 3.5-5 x 2-3 cm. including the bracts; serratures directed forward, often lying very close to the edge of the leaf, acute, with the free poinis 0.25-1 mm. deep. Inflorescence of a moderate sized head and two verticillasters set far apart.

Apparently a water form, with the upper leaves and bracts recalling the corresponding ones of *M. verticillata*, var. *ovalifolia*. Loddon Side, Berks, G. C. DRUCE.

*Var. WEIHEANA Braun = *M. Weiheana* Op. Stems stout, producing numerous short branches, thinly hairy, 2-3 ft. high or more, with internodes 4-8 cm. long, thinly hairy throughout. Leaves large, broadly ovate or broadly oblong-ovate, obtuse, or the uppermost ones small, ovate and acute, all very convex on the margin, rather finely crenate-serrate, rounded or truncate at the base, or suddenly and only shortly cuneate there, broadest near the base, usually pale red, and measuring 3-9 x 2-5.5 cm. in surface area; serratures directed forward, mostly triangular, acute, sometimes mixed with small ones, with their free points 0.25-2 mm. deep. Inflorescence with one large head and two verticillasters on the main axis, and smaller heads on the branches.

Apparently this is a river bank form, growing in water and usually named *M. aquatica*, var. *subglabra* Baker, by British collectors. Gayton Canal side, Northants; Hinksey, G. C. DRUCE; Thames banks above Molesey, Surrey, 1898, J. FRASER; Denbigh Hall, Bucks, G. C. DRUCE.

× MENTHA VERTICILLATA L., var. ADULTERINA Briq. (*M. aquatica* × *arvensis*). Stems slender amongst other vegetation, stouter in exposure, subglabrous or thinly hairy below, densely hairy upwards, ±branched below the inflorescence, diffuse or ascending, 12-18 in. high, with internodes 2-7 cm. long. Leaves *small*, elliptic, tapering to both ends, obtuse to subacute and acute, moderately to rather densely hairy on both surfaces, especially the younger ones, finely and regularly serrate, and measuring 2.5-4.5 x 1-2.5 in surface area; serratures acute, directed forward, 0.25-1 mm. deep. Inflorescence of 7-9 verticillasters and sub-spicate at the apex, with 3-5 on the branches.

Easily recognised by the small, elliptic leaves, more or less densely hairy, tapering to both ends like many common forms of *M. arvensis*, and by its dense, subspicate inflorescence. Wokingham, Berks, G. C. DRUCE; North Holmwood, 1916, and Blackbrook, Dorking, Surrey, 1919, J. FRASER.

Var. ATROVIRENS Briq. = *M. atrovirens* Host, non Boreau. (*M. aquatica* × *arvensis*). Stem slender, simple or ±branched, sub-glabrous below, more hairy upwards, often densely, 16-20 in. high, with internodes 1.5-7 cm. long. Leaves small, ovate, sometimes oblong, with the primordial ones sometimes rotund, rounded at the base, usually densely hairy on both sides, or sometimes thinly hairy and thicker in texture, finely serrate, measuring 2-3.5 x 1.3-2 cm. in surface area; serratures numerous, closely arranged, directed forward, acute, or sub-acute, 0.25-0.75 mm. Inflorescence of 7-9 verticillasters, crowded and sub-spicate. Bracts small, ovate.

The features of the variety are the small, ovate, finely serrated leaves and subspicate inflorescence. Wokingham and Wantage, Berks; Caversham, Oxon, G. C. DRUCE; Newton Ferrers, S. Devon, T. R. ARCHER BRIGGS.

Var. RUBRO-HIRTA Briq. *M. rubro-hirta* Lej. & Court. *M. pulegioides* Dum. (*M. aquatica* × *arvensis*). Stem rather stout for the group, sub-glabrous below, densely hairy above, 1½-2 ft. high, erect, with internodes 2-5 cm. long. Leaves small, broadly ovate or subdeltoid, sub-truncate at the base, hairy on both sides, varying from obtuse to acute on the upper part of the stem, measuring 3-3.5 x 1.8-2.5 cm. in surface area; serratures 5-9 on each margin, acute, tipped with a glandular mucro. Inflorescence dense, sub-spicate. Bracts cuspidate, small.

The variety is characterised by small sub-deltoid leaves with gland-tipped serratures, a sub-spicate inflorescence and small cuspidate bracts. Bungay, Suffolk, G. C. DRUCE.

Var. CAERULEA Briq. (*M. aquatica* × *arvensis*). Stem fairly stout, much branched, with ascending branches, thinly hairy below and only moderately hairy above, about 18 in. high, with internodes 2-6 cm. long. Leaves small, sub-glabrous on the lower part of the plant, thinly hairy on both faces towards the top of it, glaucous beneath, ovate, shortly cuneate, broadest a little above the base, convex on the margin, finely serrate, or many of the smaller leaves shallowly crenate, measuring 2.5-4 x 1.5-2.7 cm. in surface area; serratures acute or sub-acute, directed forward, with free tips 0.25-0.75 mm. deep. Bracts gradually smaller upwards. Flower clusters all separate.

The features of the variety are the much branched stem, the green foliage, with ± glaucous under-surface, and the shallow serratures. Winkfield, Berks, G. C. DRUCE.

Var. CRENATA Briq. (*M. aquatica* × *arvensis*). Stem erect or ascending, flexuous, 1½-2½ ft. high, with ± numerous, slender, flexuous, ascending or diffuse branches, ± hairy throughout but not densely so, with internodes 3-8 cm. long. Leaves of small to medium size, ovate, acute, shortly cuneate at the base (including the bracts), convex on the margin, shallowly crenate to finely serrate, thinly and usually shortly hairy on both sides; serratures directed forward, lying close to the margin, or the larger ones more salient, 0.25-0.75 mm. deep. Whorls of the inflorescence all separate, with gradually shortening bracts, or occasionally with the uppermost ones sub-spicate.

The small, short, crenate or crenate-serrate leaves, and usually slender stems and slender branches are the features of this variety; but under dry conditions the branches may be fewer and shorter. Wokingham and Early, Berks; Port Meadow, Oxon, G. C. DRUCE.

Var. LINTONII Briq., var. nov. (*M. aquatica* × *arvensis*). Stem about 1 ft. high, and simple apparently, sub-glabrous near the base, thinly and shortly hairy upwards, with internodes 1.5-3 cm. long. Lower leaves narrowly ovate-lanceolate, obtuse to sub-acute, shallowly and acutely serrate, shortly cuneate at the base, thinly and very shortly hairy on both surfaces, measuring 3-3.5 x 1.5-2 cm. in surface area; bracts lanceolate, acute or sub-acuminate, more tapered to the base, the uppermost scarcely shorter; serratures 0.25-0.75 mm. deep, directed forward. Floral whorls all separate, and none amongst the upper leafy bracts. Calyx short, campanulate.

This was passed throught the Botanical Exchange Club of the British Isles in 1887 as *M. arvensis* × *sativa* and has much the appearance of a narrow-leaved form of *M. arvensis*, with the same form of calyx, but with its teeth only slightly shorter than average forms of *M. sativa*. Shirley, S. Derbyshire, W. R. LINTON.

Var. OVALIFOLIA Briq. *M. ovalifolia* Opiz. (*M. aquatica* × *arvensis*). Stem erect, stout, or thinner and flexuous, 1-2 ft. high, usually freely branched below the main inflorescence, with ascending, or spreading, or diffuse branches according to the amount of moisture present or the rainfall, thinly hairy below, more densely so upwards, with internodes 1.5-6 cm. long. Leaves large, broadly oval, rounded at the base or far more often shortly cuneate, obtuse to sub-acute or acute, distinctly serrate, convex on the margin, measuring 2-4.5 x 1-3 cm. in surface area, thinly hairy on both faces, rarely sub-glabrous; serratures, directed forward, triangular, acute, 0.25-1.5 mm. deep. Bracts leaf-like at the base of the inflorescence, becoming gradually shorter upwards, broadly ovate acute, or sometimes cuspidate. Floral whorls all separate, rarely subspicate at the apex.

This common variety can be recognised by the large, oval, obtuse leaves, narrowing to both ends, and the triangular, usually well developed serratures. Briquet names a form as intermediate between the varieties *crenata* and *ovalifolia* by having shallow serratures to the leaves and sub-crenate bracts. It ramifies very freely, with long, diffuse branches when moisture is adequate. Another form has the lower bracts much longer and more gradually narrowed to the apex. A third form has lanceolate to narrowly oval, densely hairy leaves, and a short congested inflorescence of two to eight verticillasters. This is well worth a varietal name, and comes from Horton, Dorset, E. S. MARSHALL; Stonebridge, Dorking, Surrey, 1921, J. FRASER. The more typical forms have been found at Kintbury, Hurst, Radley, Lungmore, and Loddon, Berks, G. C. DRUCE; Milton, S. Hants, W. MOYLE ROGERS; Snodland, Boxley Abbey, New Hythe and R. Medway, Yalding, Kent, 1919, J. FRASER; Godstowe, Oxon, G. C. DRUCE; Stonebridge, Dorking, 1919, and Thames banks below Weybridge, Surrey, 1898, J. FRASER; Rescobie, Forfar, G. C. DRUCE.

Var. RIVALIS Briq. (*M. aquatica* × *arvensis*). Stems stout to moderately so, 1-3 ft. high, thinly hairy below, or sub-glabrous, more densely hairy upwards, simple when crowded, or when growing amongst rank vegetation, ±branched in exposure, with internodes 2-7 cm. long, more usually 2-3 cm. and leafy to the top. Leaves narrowly-ovate to ovate, broadest near the base, most convex in margin at the widest part, rounded or very shortly cuneate at the base, ± hairy on both faces, obtuse to acute, measuring 3-5.5 x 1.5-3.5 cm. in surface area; serratures acute, the larger ones triangular, 0.25-1.5 mm. deep. Floral whorls all separate, with seldom any amongst the uppermost bracts.

Ovate obtuse to acute, sharply serrated leaves, rounded or very shortly cuneate at the base are the features of the variety, so named by Briquet. Dropmore, Kintbury and Lungmore, Berks; Rotherthorpe, and Caudley, Yardley Gobion, Northants, G. C. DRUCE. Specimens from Bolder Mere, 1900, Godalming, 1904, and Holmwood, Surrey, 1916; and from Laleham, Middlesex, 1885, J. FRASER, which might be placed here, and may or may not be known to Briquet, are all characterised by *broadly ovate* leaves, very convex on the margin, and *truncate*, *rounded* or *sub-cordate* at the base. None of the above approach the narrowly ovate, acuminate leaves of Sole's Menth. Brit., t. 20.

Var. TRICHODES Briq. (*M. aquatica* × *arvensis*). Stem ± branched, hairy, about 1 ft. high or more, with internodes 2-4 cm. long. Leaves moderate in size, oblong, acute or cuspidate, more or less hairy on both faces, measuring 2-3.5 x 1.3-1.5 cm. in surface area; serratures triangular, acuminate to subulate, 0.5-2.5 mm. long, irregular and distant. Bracts lanceolate, acuminate, with 1-3 sharp or slender teeth on each margin. Floral whorls all separate.

The long, slender serratures are the feature of the variety. Hereford, G. C. DRUCE.

× M. RUBRA Huds., var. CALLIMORPHA Briq. (*M. verticillata* × *viridis*). Stem erect, red, simple or branched under the inflorescence, very thinly and shortly hairy, 2-4 ft. high. Leaves oblong to oval, shortly petiolate, suddenly pointed, obtuse or acute, dark green above, paler beneath, thinly hairy all over on both sides, 2-6 x 1.5-3 cm. in surface; serratures acute or sub-acute directed forward, 0.25-2 mm. deep, numerous and regular; bracts large, ovate, decreasing very gradually from 3.5-1.8 cm. in length at the eighth verticillaster, with full-sized serratures. Calyx short, campanulate, glabrous, teeth ciliate. Pedicels glabrous.

The large, ovate bracts of the inflorescence are the feature of the variety. The form here described is the rare one with *short, campanulate calyx*, extending towards the sub-species *Wirtgeniana* F. Schultz. South Derbyshire, Rev. W. R. LINTON.

Var. DRUCEI Briq., var. nov. (*M. verticillata* × *viridis*). Stem erect, flexuous, very thinly hairy below, with short hairs, more obviously hairy above, 2-3 ft. high, thinly branched above, with internodes 2.5-7 cm. long. Leaves oval, acute, ± cuneate at the base, minutely hairy along the midrib above, otherwise glabrous, thinly hairy on the nerves beneath; serratures 3-12 on each margin, acute, 0.75-1 mm. deep: petioles 7-13 mm. long. Bracts of the inflorescence ovate, 8-16 mm. long, acute or acuminate. Calyx short, broad, campanulate, glabrous, teeth ciliate, conspicuously lined with glands between the nerves.

The distinguishing features of the variety are the *oval, acute, finely serrated* leaves, the *long petioles*, the *small ovate bracts*, and the *short, campanulate* calyx. Canal side, Northampton to Blisworth, 1878, G. C. DRUCE. See *Fl. Northants*.

Var. LAEVIFOLIA Briq. (*M. verticillata* × *viridis*). Stem erect, flexuous, purple, simple or branched below the inflorescence, glabrous, or slightly hairy under the nodes, 2-5 ft. high, with internodes 2-6 cm. long. Leaves broadly ovate, obtuse or occasionally acute, shortly petiolate, rounded at the base, or slightly cuneate occasionally, glabrous, or having a few short scattered hairs on both surfaces, especially when young, 3-6 x 2-3.5 cm. in surface area; serratures triangular, directed forward, acute, 0.5-2.5 mm. deep, occasionally having a small tooth on the lower side. Bracts of the inflorescence *sub-rotund*, *cuspidate*, or one or two lower pairs ovate, measuring 1-4 x 1-3.5 cm. in surface, or when growing in water, occasionally 6 x 3-4 cm. Calyx long, and tubular, glabrous, with ciliate teeth. Pedicels glabrous.

The almost completely glabrous character of the plant is the feature of this variety. Sennen, W. Cornwall; Foyleriding Farm, Limpsfield, 1906, Nutfield Marsh, 1916, and Brook, Albury, 1902, all in Surrey, J. FRASER.

Var. RARIPILA Briq. (*M. verticillata* × *viridis*). Stem erect, flexuous, simple or branched under the inflorescence, ± hairy, with short hairs, 2-5 ft. high, with internodes 2-6 cm. long. Leaves ovate, obtuse, seldom sub-acute, shortly petiolate, rounded at the base, occasionally sub-cuneate, more or less *pilose on both surfaces*, measuring 3-6 x 1.5-3.5 cm. in surface; serratures much as in var. *laevifolia*. Bracts of the inflorescence *ovate*, acute, finely serrate, very small, the uppermost often shorter than the flowers, giving the inflorescence a sub-spicate appearance. Calyx and pedicels as in the species.

The thinly pilose stem and leaves, and the ovate bracts are the features of this variety. Haseley, Warwick, R. L. BAKER; Flint Hill, N. Holmwood, and Stonebridge, all south of Dorking, 1921, Westend Common, Esher, 1916, and Cobham, 1916, all in Surrey, J. FRASER.

× M. GENTILIS L., var. RESINOSA Briq. = *M. resinosa* Op. (*M. arvensis* × *viridis*). Stem 1½-2 ft. high, more or less branched, subglabrous below, thinly hairy upwards, with internodes 2.5-5 cm. long. Leaves elliptic acute, or shortly acuminate, narrowed at both ends, thinly hairy on both faces, 3-5 x 1.5-2.5 cm. in surface area, *incise serrate*, shortly petiolate; serratures *triangular subulate*, acute, directed forward, 1-3 mm. deep. Bracts similar in size and in serratures to the leaves, and only a little smaller at the apex of the inflorescence.

The incise serrate leaves are the feature of the variety. Damp pasture by a stream, Meavy, S. Devon, W. B. WATERFALL.

Var. VARIEGATA Briq. (*M. arvensis* × *viridis*). Leaves elliptic or some of the lower ones oblong, acutely, but shallowly serrate, irregularly *variegated* with yellow stripes fading to cream, along the course of the midrib and principal veins.

Ditch on a farm near St Ives, W. Cornwall, WILLIAM CURNOW; Tregaun, Cornwall, R. O. TELLOW.

Var. GRATA Briq. = *M. grata* Host (*M. arvensis* × *viridis*). Stem erect, simple or very slightly branched, thinly hairy with short hairs, red, slender, 12-15 in. high, with internodes 2-3 cm. long. Leaves lanceolate to ovate or elliptic, measuring 2-3 x 1-1.9 cm. in surface area, thinly hairy on both surfaces, with short adpressed hairs, finely and closely serrate; serratures acute, directed forward, 0.5-1 mm. deep. Bracts similar to the leaves, very gradually decreasing in size, and always longer than the pale to bright purple flowers.

The short, slender stems, small leaves and bracts and fine serration are features of the variety. Skelwith, Westmorland, H. E. FOX; River Wye, near Erwood, Radnor, 1920, W. C. BARTON.

Var. CARDIACA Briq. *M. gracilis* Sm., var. *cardiaca* Baker. (*M. arvensis* × *gentilis*). Stem erect, much branched from the base upwards, 12-16 in. high, glabrous or slightly puberulous beneath the nodes occasionally, with the internodes 1.5-5 cm. long. Leaves lanceolate to oblong-lanceolate, acute or shortly acuminate, glabrous, or having a few scattered hairs on the principal veins beneath, very shortly petiolate; serratures acute or sub-acute, directed forward, 0.25-2 mm. deep. Bracts similar to the leaves, gradually decreasing in length, but apparently always longer than the flowers.

The dwarf much branched stems, small leaves and the almost glabrous character of the whole plant are features of the variety. Huntley Common, Warwick, H. BROMWICH; near Ripley, Surrey, 1901, J. FRASER.

A form of the above with downy stems, shorter, more ovate, but small leaves, minutely hairy above and thinly hairy beneath, Jean Briquet has named "forma ad var. *gratam* vergens (*arvensis* × *viridis*)." Waste ground, Newbury, Berks, G. C. DRUCE.

M. ARVENSIS L., var. SCRIBAE Briq. *M. Scribae* F. Schultz. Stem erect, simple when crowded or growing amongst rank vegetation, or much branched in exposure, thinly hairy below, more densely so above, 12-18 in. high, with internodes 1.3-5.5 cm. long. Leaves sub-rotund to broadly ovate, rounded at the apex or ± obtuse, rounded or sub-truncate at the base, very shortly petiolate, ± densely hairy on both faces, crenate to crenate-serrate, *very rugose* when fresh, measuring 1.5-3.5 x 1.5-3 cm. in surface area; crenatures and serratures directed forward, lying close to the margin or more salient and 0.25-1 mm. deep. Floral whorls 7-9, growing to the apex of the stem and branches. Bracts *broadly ovate* to *sub-rotund*, the uppermost sub-sessile, large, and gradually smaller upwards.

A variety that is very easy to recognise by its broad, obtuse leaves, rugose leaves and bracts. In exposure it is a very leafy plant. To all intents and purposes it is *M. agrestis* Sole. Headington, Oxon; Radley, Berks, G. C. DRUCE; Holmwood Common, Surrey, 1917, J. FRASER.

*Var. ALLIONII Briq. = *M. Allionii* Boreau. Stem 6 in. high and erect, or 12-18 in. long and ascending or diffuse, according to surroundings, sub-glabrous below, thinly hairy above, with internodes 1.5-7 cm. long. Leaves elliptic obtuse to sub-acute, broadest about the middle, usually considerably tapered to both ends, very thinly hairy or sub-glabrous on both faces, finely crenate to crenate-serrate, measuring 3-6 x 1.5-3 cm. in surface area; crenatures directed forward, and serratures 0.25-1 mm. deep. Bracts as large as the leaves, similar, and but little smaller at the top. Floral whorls 8-15. Calyx sub-glabrous, with short teeth, and pedicels often glabrous.

Elliptic, sub-glabrous leaves, and short calyx teeth are characteristic of the variety. Briquet admits as forms plants with rather longer, more acute teeth, a more hairy calyx, and more or less hairy pedicels. Iffley, Oxon; Warfield, Berks; Yardley Gobion, Northants, G. C. DRUCE; Tonbridge, Kent, 1919, J. FRASER; Frampton Cotterell, W. Gloucester, 1924, Miss IDA M. ROPER.

Var. CUNEIFOLIA Lej. et. Court. Stems 1-2 ft. high, simple or branched according to environment, with ascending or divaricate branches according to their length, sub-glabrous below or thinly hairy, more hairy upwards, sometimes densely so, with internodes 2-12 cm. long. Leaves elliptic-lanceolate, much attenuated to both ends, obtuse to acute, broadest about the middle, with long petioles, sub-glabrous on both faces with short hairs or thinly hairy all over, especially the younger ones, pale apple green, crenate or finely serrate, convex on the margin about the middle, measuring 4.5-6.5 x 1.5-2.5 cm.; crenatures obtuse, serratures obtuse to acute, 0.25-1 mm. deep, and 4-12 on each margin, all remote from the base. Bracts similar to the leaves, as large, scarcely smaller at the apex and flowerless. Calyx teeth long for *M. arvensis*, the two uppermost ones sometimes as long as those of forms of *M. verticillata*, ± hairy. Pedicels usually glabrous. A river bank and ditch Mint.

Easily recognised by its pale green colour, and elliptic-lanceolate leaves, attenuated to both ends. Lungmore, and Kintbury, Berks, G. C. Druce; Cubley, Derbyshire, W. R. Linton; Milton, S. Hants, W. Moyle Rogers; Hatton, Warwickshire, H. Bromwich; Thames banks, Middlesex, opposite Long Ditton, 1921; The Mole, Mickleham Vale, Surrey, 1923, J. Fraser.

A form with dark purple calyx, verging towards the var. *melanochroa*, has been gathered at Lungmore, Berks, and Applecross, W. Ross, G. C. Druce.

*Var. densifoliata Briq. Stems erect, branched from the base, with spreading and ascending branches, occasionally simple, ± densely hairy, with internodes 1.5-5 cm. long, usually about 3 cm. Leaves broadly ovate, obtuse, *broadest and rounded at the base*, ± densely hairy on both faces, crenate to obtusely serrate, occasionally acutely serrate, making a densely leafy plant, measuring 2-4 x 1.5-2.5 cm. in surface area, occasionally more in ditches; crenatures and serratures 0.25-0.75 mm. deep. Bracts similar to the leaves very gradually smaller as a rule, and the uppermost 2-5 pairs without flowers. Calyx more or less densely hairy, with triangular acuminate teeth, rather long for *M. arvensis*. Pedicels glabrous or more or less hairy.

The broadly ovate leaves, broadest and rounded at the base, and the densely leafy plant are the features of the variety. It grows in damp cornfields, occasionally in shallow, running water. Iffley and Radley, Berks, G. C. Druce; Fairdean, Coulsdon, 1902, The Rye, Ashtead Common (water form), Surrey, 1916, J. Fraser; Braunstone, Leicester, 1916, A. E. Wade; Yeldersley, S. Derbyshire (water form), W. R. Linton.

*Var. austriaca Briq. *M. austriaca* Jacq., non All. Stems slender, erect, simple or freely branched, thinly hairy below or sub glabrous in water, ± densely hairy upwards, with internodes 1-4 cm. long, usually 2-3 cm. Leaves *small*, *elliptic*, obtuse, rather hairy on both sides, or less so in shade and water, ± conspicuously ciliate, measuring 2-3.5 x 1-2 cm. in surface area; serratures acute, 0.25-0.75 mm. deep. Bracts generally acute, otherwise similar to the leaves, and gradually smaller, with 1-3 pairs without flowers. Calyx hairy, with triangular, acuminate teeth, rather long for *M. arvensis*, deep purple. Pedicels glabrous or usually so.

The small, elliptic leaves, purple calyx, and triangular, acuminate calyx teeth are the features of the variety. Virginia Water, Surrey, 1883; Mortimer, Berks (form), G. C. Druce; Ockham Common, Surrey, 1924, J. Fraser; Thornton Reservoir, Leicestershire, 1916, A. E. Wade.

Var. OBTUSIFOLIA Briq. Stems erect, simple or branched, with ascending branches or more or less diffuse when long, sub-glabrous below, ± densely hairy upwards, with short hairs, and internodes 1.5-6 cm. long, 6-20 in. high. Leaves *elliptic obtuse*, suddenly narrowed to a large, triangular, obtuse tooth, and having *a very convex* margin, thinly hairy to sub-glabrous on both faces, rarely conspicuously hairy, measuring 2-6 x 1.2-3 cm. in surface area; serratures acute, 4-7 on each margin, 0.25-1 mm. deep. Bracts similar to the leaves, but often larger and forming most of the leafage at flowering time, the uppermost few sub-acute and not much smaller. Floral axis very long, with numerous verticillasters. Calyx hairy with triangular, acute teeth. Pedicels usually glabrous.

The broadly elliptic, obtuse leaves, with convex margin, and thin scattering of hairs are the features of the variety. The affinity is with the var. *Allionii*, but the leaves are less tapered to both ends, and the calyx teeth longer and more pointed. Castlethorpe, Bucks; Marcham, Berks; Glen Spean, Westerness, G. C. Druce; Thames banks, Middlesex, opposite Kingston, 1919, J. Fraser.

[Mr J. Fraser has kindly gone over a large set of Mints which had been sent in 1894 to M. J. Briquet of Geneva for his kind determination. They were forwarded to M. Buser at that city with a set of British Alchemillas at M. Buser's request. Despite repeated enquiries no reply was forthcoming so in 1897, when the Berkshire Flora was published, I was obliged to say (p. 393) that I was unable "to elicit any reply to my communications." The account of the Berkshire Mints was therefore necessarily less complete than I had hoped. At intervals since that time attempts have been made to recover them, as I learned that M. Briquet had kindly named the Menthae and returned them to M. Buser. In 1924 our member, the Rev. F. Bennett, was in Geneva and he was able to call on M. Buser and to obtain the parcel. After thirty years the determinations of these Mints are now able to be published in our *Report*. It may be added that, so far, I have not been able to give the references to the places of publication of M. Briquet's varieties other than those which are marked with an asterisk. These will be found noticed in Briquet's *Les Labiées des Alpes Maritimes*, 1891. Perhaps the three new varieties given by him have not hitherto been published. Mr Fraser, with his well-known knowledge of this group, has kindly given us the above article so that members may have a description of these new additions to our flora. It may be remarked that his own gatherings were not among those which M. Briquet examined.—Ed.]

ADDITIONS TO THE FLORA ZETLANDICA.

G. Claridge Druce, D.Sc., LL.D.

Rumours having reached me of the occurrence of some plants in the Zetlands which had hitherto been unobserved I made my third visit, in the dullest of dull summers, during August 1924 when nearly a month was spent with my friends Prebendary Burdon and Mr T. Churchill in exploring portions of the mainland not examined by me during my previous visits. The results scarcely repaid one for the trouble and time, but it had merit—it showed how little had been missed by Mr Beeby and myself on previous occasions. One, however, has to remember that the rarer plants of these islands are very local and exist in very small quantity so that future workers should not be deterred from continuing their investigations. The outlying isles have been practically unworked, and the loch vegetation has been inadequately examined since the absence of boats even on such large pieces of water as Girlsta renders dredging well nigh impossible. "Waders" are of little use since the water deepens very rapidly in many lochs. The majority, it would seem, are practically destitute of Charas and Pondweeds.

To reach the Zetlands from Oxford is now quite easy. The train, leaving about seven in the evening, lands one at Aberdeen before eight in the morning, and one can leave by the S. Sunniva at three in the afternoon and, weather permitting, and that means much, reach Lerwick at nine in the morning. This we did. The Grand Hotel offers comfortable quarters and we had a good car and an excellent chauffeur, Mr Ratter, who was most thoughtfully kind, supplied by Mr Ganson for about ninepence a mile. The distances to reach the extremities of the mainland are long and this necessarily makes motoring expensive. One may add that Lerwick is "dry" so the ordinary botanist must take "something" with him since nothing can be sold by the hotels. One can, however, buy stout or beer wholesale, and we were perforce obliged to buy two dozen quart bottles of the former which was the minimum amount allowed to be sold—a reductio ad absurdam of prohibitive legislation. Oddly enough there is one house in the middle of the Island where drink can be supplied as before. The roads to it did not seem unworn.

Although on the mainland of Scotland August 1924 was one of the wettest on record yet it was not so in Zetland. It is true our first day's visit to the Scord of Tresta and Weisdale resulted in a thorough drenching. We climbed Weisdale Hill in search of *Dryas* and found it in quite an unlikely place as it is on acid rock for the most part peat-covered. We did not meet that day with anything else of interest, but the mist prevented a complete examination. The rest of the month, till our day of departure was free from rain or nearly so, but the temperature was low and mist frequently capped the tops of the hills and thus retarted botanical work. The vegetation seemed less developed and the flowers were—with few exceptions—not in evidence. The Orchids were well nigh over. Three plants, however, were in magnificent show—first the var. *ornatus* of *Senecio aquaticus* which was in great beauty, not only in rough pastures but in disturbed ground, derelict agrarian soil, and especially on the fixed dunes of Spiggie and Quendale. The plant is, perhaps, sub-specifically distinct. It is well marked by its compact inflorescence which is shaped like an inverted pyramid or rather cone, the very conspicuously ligulated blossoms being so closely massed as to be nearly coterminous. The plants are low in stature, under a foot usually, and their abundance gladdens the eye and forms a welcome contrast to the rather sombre surroundings. Next to this, if indeed it is proper to accord it a subordinate position, is *Euphrasia borealis* which is generally scattered through Zetland but reaches its maximum of abundance on the sandy soil of the south at Scousburgh, Sumburgh and Quendale. It has a rich variety of colour from the richest royal purple to white, or white with violet markings, or in varying shades of lilac. It grows in such dense masses as to justify the simile used by Kerner of the Eyebright "forming a Milky Way of blossom." The Spanish name for the Milky Way is derived from the number of pilgrims who visited the shrine of St James at Compostella. Numerous as these were, they are outnumbered by the Eyebrights in Dunrossness or Whiteness. The third plant of great beauty is *Parnassia palustris* L., var. *condensata* Travis & Wheldon, which grew intermingled with the two former on the damper portions of the Spiggie Links. Its pure white, large petals and small stature made a most delightful addition to the Eyebright and Ragwort. Even an alpine meadow could scarcely be more beautiful. One may add that Mrs Bruce of Sumburgh told me that the Eyebright round her desmesne had much increased in recent years and that it was now much damaging the pasture. One cannot avoid reference to another striking plant of Scousburgh and Sumburgh Links—the distinct looking *Gentiana septentrionalis* which is like a stunted *Amarella*, but the flowers are, when expanded, uniformly of a white or palest lilac or rose-tint, and star-like. They are marked on the outside with pale reddish-purple. Although sometimes much branched from the base, it is often quite simple.

I have alluded to our first day on Weisdale Hill. On the way we examined the opposite side of the Voe and noticed an abundance of *Silene acaulis* near the coast-level. Much of it was barren and formed a close-set turf. A few plants were in fruit. Pure white *Gentiana campestris* was in the vicinity, as also a small quantity of *Alchemilla filicaulis* with a few plants of stunted *Gnaphalium sylvaticum*. The next day we motored to Aith Voe. A marsh at its head yielded *Schoenus nigricans*, var. *nanus*, *Selaginella*, *Orchis praetermissa* and *Scirpus pauciflorus*. Thence we drove by East Burra Firth to Gon Firth by the Loch of that name and then climbed, and a long trudge it was, by Smirla Water to Bratta Field where grew *Thalictrum alpinum* on the higher rocks. *Salix herbacea*, *Euphrasia foulaensis* and *micrantha* were gathered on the way to Marrafield Water. Here a small form of *Pinguicula vulgaris* occurred, as well as *Drosera rotundifolia*, forma *pygmaea*. On the Holm grew *Rhinanthus groenlandicus* and *Juncoides sylvaticum*, which Churchill waded in for. The hills of the central part of the mainland are not high yet from the frequent mists, are bad places as one can so easily miss one's direction in the featureless moorland, and the ground is not easy walking. We returned by Olna Firth and Sandwater to Lerwick. On Sunday we visited the Sound and the Lerwick quarry to see the celebrated Corduroy fossil which has raised so much controversy, Professor Lang kindly showing it us it situ. We found good *Cochlearia danica* and *Taraxacum naevosum*. On Monday we had a long journey by the Olna Firth Whaling station where we added *Radicula islandica* to the Zetland list, but the Norge fishers may have accidentally brought it with them. Several large whales were being cut up, the carcasses and refuse attracting an enormous quantity of various kinds of gulls which are lethargically fat. The stench from the refuse-burning followed us for seven miles and made us retch with its horridness. We went by Busta Voe and Brae to Delting. From Scatsa we climbed Dalescord Hill where *Epilobium palustre* occurred as a large-flowered plant. *Lotus corniculatus*, too, had very large blossoms (the var. *grandifolia*). Here also were *Carex pilulifera* and *Festuca ovina*, var. *supina vivipara*. Garth's Voe was next visited. The peat here is very thick and contained the remains of a former woodland. On the adjacent shingle *Spergularia media* and *Cochlearia groenlandica* occurred. Another day was spent at Aith Voe where we got *Carex dioica*. Going thence to Walls we searched Kirkie Garth Loch vainly for *Zannichellia polycarpa* which Beeby found there. Growing and flowering some nine inches below the water-surface was a *Ranunculus* with flaccid leaves and small unopened flowers, certainly self-fertilised. The leaves were longer than those of the Forfarshire plant, but I am inclined to refer it to *R. Drouetii*. *Carex vesicaria* was plentiful near Grasswater.

Our next expedition was northwards by the gloomy and monotonous Petta Dale where, on the slope of Hoo Kame *Poa irrigata* was gathered. Thence to Olna Firth, where the wind, blowing the stench of the whales away from us, we were allowed in comfort to enjoy the magnificent scenery of that extensive fiord. Then to Ell Wick and to the rocks of Mavisgrind and the Cliva Hill, where a Hawkweed *Hieracium Sommerfeltii* was obtained new for Zetland. *H. protractum* and *Sagina subulata*, var. *glabra* were in fine condition. As the road was under repair it required delicate driving to avoid a too rapid descent to the sea or a collision with the rock-cliffs. Cliva affords one ot the best hunting grounds in Zetland. It was a long drive still to reach Eala Water, passing on our way Punds Water. Here we made a detour to the west, passing a burn which is the only known locality for *Hieracium subtruncatum*. At the interesting Ura Firth on the shingly strand grew splendid specimens of that most lovely plant *Pneumaria maritima*. *Matricaria inodora*, var. *phaeocephala* was in fine blossom and *Orchis praetermissa* grew in an adjacent march. We then went along the south shores of Ronas Voe getting a fine view of the cliffy base and rounded summit of Ronas Hill. We noticed the little croft of Feal which Beeby commemorates in *Hieracium fealense*. On the more western rocks grew a few plants ot *Hieracium breve*, one of the rarest plants in the world. From Orrwick at the head of the Voe we returned by the east side of Eala Water, and then visited Ollaberry where *Thalictrum alpinum* grows near the coast-level and where *Elymus* abounds. On our homeward journey we saw Ivy growing on a house at Girlsta Loch. It also occurs on Fort Charlotte at Lerwick, but it is probably not a native plant in Zetland. A day was spent at Scalloway where we found that the place where *Euphrasia latifolia* grew had been swept and garnished but *Aira caryophyllea* still grew on the cliffs. We dredged Tingwall Loch with small success nothing new being obtained. The Charas were not as good as on the previous visits. *C. delicatula*, var. *annulata* was in small quantity but there was plenty of *Nitella opaca*, var. *brachyclema* and *Potamogeton filiformis*. *P. suecicus* we found only as drifted specimens and never came upon the main bed, but a strong wind made rowing and collecting a great difficulty. No sooner were you on a good bed of weeds than the wind blew you away. We spent a quiet day examining Clickimin Loch where *Mimulus guttatus* grows and visited the famous Brough on its borders. We then took a motor-boat from Lerwick and went round the Isle of Bressay and then that of Noss. Although there was a slight swell on we were enabled to get close to the superb eastern cliffs, about 600 feet high, on the ledges of which nest innumerable birds. At our approach they rose in clouds and circled round making a deafening noise. So many are they that they almost obscure the evening light. It is a most wonderful sight and one is so close that one can identify on the rocks the snowy Kittiwakes in thousands, the Herring, Greater and Lesser Blackbacked Gulls, the Shags and Cormorants, Gannets and Guillemots, the comical Puffins, the graceful Terns and the piratical Skuas. Then rolling with the swell we passed the Giant's-leg, and went into the gloomy cave where lurked the Divers and Shags. On the rocks above grew *Matricaria* and *Silene maritima*.

On the Saturday we left Lerwick to spend a week at Spiggie in the south of the island. After the somewhat gloomy north it is a relief to come to the yellow sands of Scousburgh. The journey down is full of interest as we passed on the way the copper mines of Sandwick, the wonderful Brough of Mousa, the gorge, such as it is, of Channerwick and the *Jasione*-covered banks of Clayval. The flowers on the links were magnificent as we have already noticed as regards the four chief constituents, but there were also *Carex incurva* in great quantity, *Cerastium tetrandrum*, often very luxuriant, a few plants of *Ligusticum*, fewer still of *Pneumaria*, *Agropyron junceum*, *Festuca arenaria*, *Ammophila* and *Elymus*, fine beds of deep blue *Vicia Cracca* and here and there the snowy white pearls of *Sagina nodosa*. The corn crops afforded new plants to the Zetlands in *Viola lepida* and *V. obtusifolia* and there is much *Lycopsis*, *Galeopsis* and *Spergula sativa* with its strong valerianaceous smell. We met the children of the Headmaster of the School at Lerwick and their sharp eyes found several of these cornfield-weeds. Miss Hunter showed me a Poppy she had found at Sumburgh, and also *Chrysanthemum Leucanthemum*, an adventive in the Isles. The Prebendary found *Myrrhis* and I got *Archangelica* as relics of cultivation. The uses of these seemed to be unknown to the crofters. Boddam was visited to see the great bed of *Geranium Robertianum* which Beeby discovered. It is unknown elsewhere in the island. There, too, grew as garden-relics *G. pratense* and *Imperatoria* and quantities of *Filix-foemina* were in the vicinity. A most enjoyable walk was taken to Noss Hill above the Wick of Shumie when *Euphrasia foulaensis*, *E. micrantha* and *Antennaria* were gathered. From the high cliff one looked down to the rocks in the sea on which fourteen seals were basking in the warm sunshine. On the way back I obtained fine fruiting specimens of *Callitriche polymorpha* from a ditch on the west side of Loch Spiggie. On Monday we motored to Clumlie Loch which gave little of interest except enormous *Equisetum limosum*. On Tuesday we dredged Spiggie and found *Potamogeton nitens*, *pectinatus* and *filiformis*, splendid *Ranunculus Baudotii*, masses of *Nitella opaca*, var. *brachyclema*, verging also into the type, *Chara aspera* and *contraria*, *Ruppia rostellata*, *Callitriche autumnalis* and other aquatics. Tuesday was spent in dredging Brou Loch which is rich in aquatics. Immense quantities of *Chara aspera* and *Nitella opaca*, var. *brachyclema* occurred. There was also *Utricularia major*, barren, but probably this. After much work *Elatine hexandra* in small quantity was obtained, a most interesting extension of its range. *Eleocharis acicularis* was seen. This definitely adds it to the Flora. Both species of *Isoetes* were also found. On the treacherous bog which lies between the two Lochs grew *Mimulus*, *Caltha radicans* and *Utricularia ochroleuca* but no vestige of *Carex limosa*. We drove in the afternoon to Huesbreck where *Tolypella nidifica* was scarce and in poor condition. *C. contraria* grew with it as well as *Potamogeton praelongus*, and there was much *Myosotis palustris*, var. *strigulosa* round its margin. There is a wonderful piece of fixed dune to the west on which grew *Carex incurva* and *Sagina nodosa* as the var. *monilifera* in plenty. Then Sumburgh was visited and we had a most enjoyable walk on the splendid links on which were masses of *Euphrasia borealis* and plenty of *Gentiana septentrionalis* with *Carex arenaria*, and *Galium verum*, var. *maritimum*. At Sumburgh the mystery of the Poppy was unravelled for on the foreshore it grew in some plenty as a very small, scarlet-flowered plant, the petals having a large black blotch fringed with white at the base. Calling at Mrs Bruce's house, she kindly took me round her beautiful garden where the poppy had been grown for some years and seeded freely. The specimen first shown me was without leaves and being so small and faded suggested a *Rhoeas* plant but it proved to be *P. somniferum*, var. *hortense*. The Carraway is common here. I then walked to Grutness where *Ranunculus Baudotii* is frequent and where *Ligus* *ticum* occurs. About Sumburgh, but rarely, grows *Bartsia Odontites*. Near Tolob, where the roar of Sumburgh Roost was much in evidence, *Archangelica* occurred and *Catabrosa* was noticed. Next Quendale was worked. We noticed on a crofter's house-roof *Ammophila* and on the roadside white-flowered *Prunella*. A walk across the fixed dunes afforded an addition to the Flora in *Trifolium dubium*. On the way to Hillswell *Catabrosa* was noticed and much *Ranunculus hederaceus*, *Myosotis palustris*, var. *strigulosa* and *Carex incurva*. In the Loch grew *Potamogeton pectinatus*. A walk in the afternoon to the beautiful Bay of Clayval resulted in seeing *Nepeta hederacea*, an evident straggler from ancient culture. By the stream which once worked the corn-mill at Scousburgh *Mentha piperita* is abundantly naturalised. Moonwort grew locally plentifully. On one side of Brou Loch *Radiola Radiola* grew very sparingly.

A day was devoted to climbing Fitful Head from Quendale. The top is 928 feet high. It commands a distant view of Foula, and a glorious expanse of the Zetland coast. Fitful Head is composed of a clay-slate rock and is poor in vegetation though *Saxifraga oppositifolia* is recorded for it. We saw *Euphrasia foulaensis*, *latifolia* and *micrantha*, *Dryopteris aristata*, var. *alpina*, *Deschampsia caespitosa*, var. *brevifolia*, *Luzula sylvatica*, var. *gracilis*, *Polypodium vulgare*, var. *breve*, *Cerastium tetrandrum*, var. *congestum*, *Polygala dubia* new to the Flora, *Jasione* in varying forms, *Carex binervis*, etc. The rock and sea views were magnificent but, alas, too soon came down the inevitable mist and obscured the views of scenery and even of the plants around us. Descending we found much *Sagina maritima* at the base in varying forms. On the way back from Spiggie to Lerwick Channel Wick was explored where there is *Filix-mas* and *Salix aurita*, and at Levenwick a form of *Mentha longifolia* is naturalised. Here, too, was *Glechoma* straggling from cultivation. We could see nothing of *Erodium* which Beeby once found there. An afternoon was devoted to Dales Voe where grow *Spergularia media* and *Cochlearia* but the gneissic rocks of this area are botanically barren. We had a delightful morning at Whiteness, Stromness Voe, and Weiss Voe where we found heaped up on the Voe-shingle quantities of the type *Zostera marina*, which Beeby failed to detect in Zetland and with it its var. *angustifolia*. Here, too, grew *Ruppia rostellata* and on the low rocks, probably formed of a blue granular limestone, *Silene acaulis*, *Polygala vulgaris*, *Achemilla filicaulis*, *Rubus saxatilis* very small, and *Avena pubescens* along with much *Gentiana campestris*. An afternoon was spent at Gardie House in Bressay, the seat of Mrs Cameron, who showed us a silver beaker which had been taken from the El Gran Grifin, flagship of Admiral Don Juan Gomez de Medina, one of proud Spain's Armada galleons which was wrecked on Fair Isle. Here, too, we met with Miss Lester-Garland, the daughter of one of our valued distributors. In the extensive gardens occurred as weeds *Volvulus sepium* and *Convolvulus arvensis*. *Lythrum Salicaria* and white-flowered *Epilobium angustifolium* were effective garden plants. On the wayside grew *Symphytum peregrinum* and there was much *Glyceria distans*, var. *procumbens* about the pier.

Then we once more determined to visit the north as far as Nesting. We traversed the gloomy Dales Voe to Lax Firth and then went to Wadbister where we found a delightful ravine which has been cut through by the burn which issues from Girlsta Loch and works a corn-mill at its southern end. Here in the gorge we saw a Dog Rose in flower. It was too young to accurately classify, but Col. Wolley-Dod says it is probably a *subcristata* form. Here also grew *Alchemilla pratensis*, *Selaginella* and *Filix-foemina*. Then we visited the shingly coast where was good *Glyceria distans*, var. *prostrata*, *Cochlearia groenlandica*, etc. Next we went northwards to South, and then to North Nesting, over a rolling country with good sea views to Whalsay Island but met with few interesting plants. Some of the Lochs have Spargania in them, probably *S. affine*, but there was not much to excite botanical enthusiasm as we progressed to Laxo Voe. There the Laxo Burn comes in and following up this brawling stream we met with *Hieracium pulchelliforme* new to the mainland. It was hitherto known only from Unst. It was in good flower and near it grew *Salix aurita* and its var. *minor* as well as another barren willow. There was much *Filix-mas* too and a little *Polypodium vulgare*. We then took a roughish road to Voe and through dark Petta Dale to Lerwick. The following day for a change we went westwards to Tresta Voe, Bixter Voe, and by Aithsting to Clousta Voe a piece of water of considerable beauty. On low rocks close to the sea grew *Thalictrum alpinum* and here we also got *Sagina subulata*, var. *glabrata* and *Orchis purpurella*, but this gneissic area is singularly barren. Here and there the true *Orchis maculata* is fairly frequent in varying shades of colour but showing no approach to *Fuchsii* which seems entirely absent.

We had been trying to keep a good day for Ronas Hill for fates hitherto had been most unkind. By the time we had reached the hill it had always put on its nightcap and a thick one too. However we made one more journey over ground we knew too well, traversed the dangerous (under repair) Mavinsgrind, saw the bright Hawkweeds on Cliva, the *Luzula* and *Angelica* on the holms of Punds Water, and so on past the disused Ronas Whaling Station to Colla Firth. Thence we ascended the Hill the highest point of which is 1475 feet. It is composed of a red disintegrated granite. The long trudge up Collafirth Hill and Ronas field offers little of interest except the views now and then obtained across the Voe. On the stiffer slope above the Grudburn where *Lonicera* and *Aucuparia* sparingly grow and in the gully of which *Pteridium aquilinum*, var. *lanosum* also occurs, a few alpines appear such as very dwarfed *Alchemilla alpina*, *Lycopodium alpinum* and *Selago*, and a tuft or two (literally) of *Juncoides spicatum*. *Juncus trifidus* was on the summit level where *Saussurea* grows in barren rosettes and *Statice planifolia* is very tiny, if indeed it be that species. There is dwarfed *Solidago* which is not *cambrica*, small *Leontodon autumnale* and *Salix herbacea* but the wind drives with such force over this exposed summit that the very soil is itself lifted into the air. The most interesting plant of this wind-swept ground is a *Plantago* which must, I think, be put under *Edmondstonii*, from which it differs in many particulars. Just as there was some chance of getting to the western rocks below us down came the mist and we had to retreat gathering on the way poor *Loiseleuria* and *Carex rigida*. On the eastern side I nearly came to a watery grave while trying to pick *Deschampsia setacea* which grew in deep water although it was only a tiny pool half sphagnum covered.

Our final day was occupied in going over the same ground to Collafirth thence under the Bergs of Skelberry to Burra Voe, then to Sand Voe and Isbister. About this remote homestead grew much *Matricaria suaveolens* which had been brought in with chicken-food some years ago. There was also *Symphytum peregrinum*. Then I climbed to the Lee of Setter finding robust specimens of *Saxifraga oppositifolia*, *Carex pilulifera* and *Thalictrum alpinum* at low elevations. The plant of this area is *Hieracium zetlandicum* but I found the field known as Benegarth, its classic locality, where on my last visit there was good quantity, had just been mown and *zetlandicum* was being made into hay—if indeed the weather ever allows that to come about. I found that the lady raking the crop was none other than the Miss Hay who was Beeby's hostess on his Zetland visits. She carefully preserves the dried specimen he gave her of this new Hawkweed, and was most excited to find that I knew him well. I found a few small specimens on the Lee above and also the leaves of *Polygonum viviparum*, var. *alpinum* which he also gathered there. Then I pursued my lonesome way by the Lochs of Setter to the remote Fethaland and on that wide expanse of rocky coast and shimmering water with its innumerable facets of light flickering in the sun I said my good-bye to Ultima Thule.

Before one leaves the Zetland Flora allusion must be made to the extremely restricted habitat of many Zetland plants. *Hieracium breve* is limited to a few specimens on the north side of Ronas Voe, *H. subtruncatum* to a small burn near Eala Water, *Castalia* to a small loch in the Walls area, *Toypella nidifica* to a tiny loch in Dunrossness, *Melampyrum pratense* to the northern slope of Saxaford, *Geranium Robertianum* to a patch of shingle at Boddam, *Aira caryophyllea* to a cliff at Scalloway, *Lathyrus maritimus* to Unst, *Sagina saginoides* to a minute area, and so on.

In my previous Flora (p. 7) I mentioned that the plants then known to grow in the Zetlands comprised 446 native and 59 adventive species. 70 others had been recorded but mostly in error. In this list *Gnaphalium sylvaticum* should be inserted in place of *G. norvegicum*. This visit verified the occurrence as an alien of *Nepeta hederacea*. To the alien list it adds *Papaver somniferum*, *Radicula islandica*, *Brassica Rapa*, *Myrrhis*, *Archangelica*, *Petasites fragrans*, *Convolvulus arvensis*, *Mentha longifolia* and *piperita*, and *Salix viminalis*—12 species. Thirteen additional species or sub-species of native plants besides several varieties are added—*Viola Lejeunii* and *obtusifolia*, *Polygala dubia*, *Trifolium dubium*, *Hieracium Sommerfeltii*, *Taraxacum naevosum*, *Thymus pycnotrichus*, *britannicus* and *glaber* and *Eleocharis acicularis* (confirmed) besides *Bursa lutetiana*, *concava* and *sinuosa*.

The Zetland Flora thus consists of Native species, ...	456
Adventive, ...	73
	529

Sixty-nine species have been recorded probably in error or were mistaken for other species. The three Bursae have not been included and several Taraxaca are awaiting identification. I have to offer warm thanks to Mr J. Campbell, Mrs Bruce, Mrs Cunningham Hay and Miss Hunter for kind help; and to Mrs Gregory, Mr A. Bennett, Mr J. Cryer, Mr C. E. Salmon, Dr Drabble, Col. Wolley-Dod, Herr Ronniger, Herr Dahlstedt, Prof. Danser and Dr Almquist for critical assistance.

7. Thalictrum alpinum L. Not rare. Within a few feet of the sea level at Clousta Voe; on Blatta Hill; Fethaland; Isbister.

20. Ranunculus acris L. With very large flowers at Spiggie. Var. rectus (Bor.) seems the common form.

42. R. Baudotii Gren. Beautiful specimens in Loch Spiggie: Brou Loch, with submerged but no floating leaves: abundant at Grutness Voe.

46. R. hederaceus L. Common about Hillswell, Quendale and Dunrossness.

47. R. Ficaria L. Gardie House, Bressay. Mrs Bruce tells me it is not rare about Sumburgh, but we were too late to see it in flower.

*†79. Papaver somniferum L Alien. Hortal. On the foreshore at Sumburgh, an escape from the garden of Mrs Bruce where it seeds freely. It is not the type, but a garden variety with a deep black blotch at the base of the crimson scarlet petal. Many of the plants were very small and slender.

81. P. dubium L. Sumburgh and Spiggie, in oat crops.

111. FUMARIA OFFICINALIS L. Scattered specimens at Levenwick and Spiggie.

*126. RADICULA ISLANDICA (Oeder) Dr. Near the whaling station at Olna Firth perhaps introduced by the Norge whalers. I saw it nowhere else.

170. COCHLEARIA GROENLANDICA L. Aith Voe; Garths Voe; Dales Voe; Laxo; Scalloway; Urafirth.

†*208. BRASSICA RAPA L. Alien. Sumburgh.

*232. BURSA LUTETIANA (E. At.). Spiggie. New to Britain.

*232. B. CONCAVA (E. At.). Scousburgh.

*232. B. SINUOSA (E. At.). Scousburgh; Scalloway; Lerwick.

271. CAKILE CAKILE (L.). (*C. maritima* Scop.) Urafirth; Garths Voe.

274. RAPHANUS RAPHANISTRUM L., var. FLAVUM Gray, the common form. Occurred on sea sand at Spiggie.

293. VIOLA SYLVESTRIS Kit. Wadbister; Laxo.

294. V. RIVINIANA Reichb. Weisdale, and as a cleistogamous form.

Forma MINOR Greg. Fitful Head.

295. V. RUPESTRIS Sch., var. GLABRESCENS Neum. A not uncommon plant as at Laxo; Whiteness Voe; Ward of Scousburgh; Fitful Head; Sumburgh.

* × CANINA. Lee of Setter.

296. V. CANINA L., *var. PUSILLA Greg. Laxo; Marrafield; Ronas Hill.

301. V. PALUSTRIS L. Weisdale, etc. *Epipsila* not seen.

*303. V. VARIATA Jord. Burrafirth; Tingwall.

*303. V. LEJEUNII Jord. Cunningburgh; Spiggie; Setter.

*304. V. OBTUSIFOLIA Jord. Spiggie; Scousburgh.

308. POLYGALA SERPYLLIFOLIA Hose (*serpyllacea* Weihe). Weisdale; Scousburgh; Ronas Hill; Fitful Head; Wadbister.

309. P. VULGARIS L. Weisdale; Clousta Voe; Setter; Stromfirth.

*310. P. DUBIA Bellynck. Fitful Head.

334. SILENE MARITIMA Sm. Frequent on the coast. Urafirth; Spiggie; Fitful Head; Grutness; Clousta.

346. S. ACAULIS L. At the Sound, Lerwick; Stromfirth; Weisdale—here, at about 100 feet above sea-level, it forms a noticeable feature in the turf and was fruiting sparingly.

358. LYCHNIS FLOS-CUCULI L., sub-var. RUBESCENS Dr. Clickhimin.

360. L. DIOICA L., var. ZETLANDICA (Compt.) Dr. Ollaberry; Urafirth; Collafirth; Burrafirth; Clousta Voe. Often a beautiful plant and sometimes cultivated in the gardens.

370. CERASTIUM VULGATUM L., forma MACROPETALA Dr. Clickimin; Ollaberry; Tingwall, etc.

374. C. TETRANDRUM Curt. Lerwick.

Forma CONGESTUM Dr. Lerwick; Fitful Head.

Forma LUXURIANS Dr. A foot high in the sheltered sand dunes near Spiggie.

379. STELLARIA MEDIA Vill., var. MAJOR Koch. Quendale.

384. S. ULIGINOSA Murray. Weisdale; Burravoe, etc.

393. ARENARIA PEPLOIDES L., var. DIFFUSA Hornem. Ollaberry.

399. SAGINA NODOSA Fenzl, as the var. MONILIFERA Lange. Spiggie; Quendale; Wadbister; Stromfirth, etc.

401. S. SUBULATA Presl. Ronas Hill.

Var. GLABRATA Lange. Clousta; Cliva.

407. S. MARITIMA Don. Swina [not Surima] Ness; Grutness; Fitful Head.
Var. PROSTRATA Towns. Fitful Head.

408. S. PROCUMBENS L., *var. CORALLINA. Lerwick.

410. SPERGULA SATIVA Boenn. Weisdale; Spiggie, etc.

412. SPERGULARIA MEDIA Presl. Garth Voe; Voxter.

413. S. SALINA Presl. Aith Voe; Dales Voe.

421. MONTIA FONTANA L., var. BOREO-RIVULARIS Dr. Weisdale; Burga Water; Clousta Voe.

424. ELATINE HEXANDRA DC. The Shetland record rested on a floating specimen collected by Mr Beeby in Kirkiegarth Loch, where I was unable to find it. This year while dredging in Brou Loch we were fortunate to detect it in situ. This Loch is a long way from Beeby's locality.

432. HYPERICUM PULCHRUM L. Not uncommon. Ronas Voe; Cliva; Wadbister; Dalescord Hill.
Var. PROCUMBENS Rostr. Fitful Head; Ronas Hill.

466. RADIOLA RADIOLA (L.) (*R linoides*). Very rare. Brae side overlooking Brou Loch.

470. LINUM CATHARTICUM L., var. DUNENSE Dr. Quendale.

†478. GERANIUM PRATENSE L. Alien. Hortal. Weisdale; Boddam; Burra Voe. With no pretensions to indigenity.

488. G. ROBERTIANUM L. In Mr Beeby's locality at Boddam. There is a large patch on the shingle where it has been known for many years, but it was doubtless introduced there.

†537. ULEX EUROPAEUS L. Alien. Near Stromfirth.

599. TRIFOLIUM PRATENSE L., forma ALBA. Aith Voe.

†627. T. HYBRIDUM L. Alien. Quendale; Whiteness, etc.

628. T. REPENS L., var. GRANDIFLORUM Peterm. Hillswick Voe.

BEEBY; Tingwick; Spiggie; Balta. See also Erith's *White Clover* 116, 1924.

*637. T. DUBIUM Sibth. Among the sand dunes near Quendale, native, and on a field-border at Scousburgh. In the latter place it looks introduced.

641. ANTHYLLIS VULNERARIA L., var. MARITIMA (Koch). Fitful Head.

647. LOTUS CORNICULATUS L., forma GRANDIFLORUS. Dalescord; Cliva, etc.

688. VICIA SEPIUM L. Lerwick; Ollaberry; Whiteness.

†748. RUBUS IDAEUS L. Alien. Escape at Busta.

879. R. SAXATILIS L. Whiteness; Stromfirth near the sea level, small plants.

890. POTENTILLA ANSERINA L., var. NUDA S. F. Gray. Lerwick; Quendale; Spiggie.

908 (2). ALCHEMILLA MINOR Huds., var. FILICAULIS (Buser). Brouster; Wadbister; Stromfirth.

912. A. ARVENSIS Scop. Spiggie, rare.

934. ROSA SUBCRISTATA Baker. Wadbister Glen but the specimens are too young to be absolutely certain.

975. SAXIFRAGA OPPOSITIFOLIA L. Lanchesto Hill. This is a stouter plant than the ordinary mountain one.

1000. PARNASSIA PALUSTRIS L. Aith Voe; Weisdale.
Var. CONDENSATA Tr. & Whel. In magnificent flower at Spiggie.

1029. DROSERA ROTUNDIFOLIA L. Blatta Field; Dalescord; Fitful Head; Aith Voe. Often as diminutive plants.

1033. MYRIOPHYLLUM ALTERNIFLORUM DC. Clickimin; Sandness.

1035. CALLITRICHE STAGNALIS Scop., var. SERPYLLIFOLIA Lönnr. Spiggie; Boddam.

1035 (2). C. PLATYCARPA Kuetz. Petta Water.

1038. C. POLYMORPHA Lönnr. Clousta Voe; between Spiggie and Quendale in some quantity and in excellent condition. The long styles were a marked feature.

1039. C. INTERMEDIA L. Tingwall.

1054. EPILOBIUM MONTANUM L. Sumburgh House, as a garden weed; Scalloway.

1057. E. PALUSTRE L. Weisdale; Ollaberry.
Var. FONTANUM Hausskn. Delting.

1103. CARUM CARVI L. Abundant in fields about Spiggie, Tolob, Clayval, Grutness and Levenwick. It has all the look of a native plant, but its occurrence in and about kirkyards and houses indicates its use as a condiment. In Dunrossness and the south of Shetland it has a distinct claim to indigenity.

†*1116. MYRRHIS ODORATA Scop. Alien. Spiggie, about houses. Prebendary BURDON.

1126. ANTHRISCUS SYLVESTRIS Hoffm. Walls; Ollaberry; Quendale. All as the var. ANGUSTISECTA Dr.

1144. LIGUSTICUM SCOTICUM L. Lerwick; Grutness. Known to Mrs Bruce as Wild Celery.

1147. ANGELICA SYLVESTRIS L., var. DECURRENS Wallr. Weisdale; Delting.

*†1148. ARCHANGELICA ARCHANGELICA (L.) Karst. Alien. Relic of cultivation. Formerly much cultivated, now its uses appear to have been forgotten. About houses and garths at Spiggie, Boddam and Tolob.

†1152. PEUCEDANUM OSTRUTHIUM Koch. Boddam, a relic of cultivation.

†1172. HEDERA HELIX L. On Fort Charlotte, Lerwick; on a house at Girlsta.

†1178. SAMBUCUS NIGRA L. Alien. Spiggie.

1198. GALIUM PALUSTRE L., var. MICROPHYLLUM Lange. Scatsa Water.

Var. WITHERINGII (Sm.). Spiggie.

1199. G. VERUM L. Fitful Head.

*Var. MARITIMUM DC. On the sands near Quendale.

1237. SCABIOSA SUCCISA L. Benegarth; Spiggie, with pink flowers.

1243. SOLIDAGO VIRGAUREA L. Dalescord Hill; Cliva rocks; Collafirth.

1248. BELLIS PERENNIS L., forma PROLIFERA. The Hen-and-Chicken's Daisy. Dunrossness, Mrs SAXBY.

1270. ANTENNARIA DIOICA Gaertn. Benegarth; Weisdale; Spiggie; Fitful Head.

1275. GNAPHALIUM SYLVATICUM L. Isbister; Stromfirth; Dales Voe.

1329. ACHILLEA MILLEFOLIUM L., forma ROSEA. Quendale.

1353. CHRYSANTHEMUM LEUCANTHEMUM L. Very rare. Spiggie, Miss DORIS HUNTER.

1360. MATRICARIA INODORA L., var. PHAEOCEPHALA Rupr. Urafirth; Noss.

†1362. M. SUAVEOLENS Buch. Aith Voe; Ollaberry, etc. Very abundant at Isbister where it was originally introduced with chicken-corn.

†1366. TANACETUM VULGARE L. Virkie; Clousta; Spiggie. A relic of cultivation.

1368. ARTEMISIA VULGARIS L., var. COARCTATA Fors. Weisdale; Spiggie; Grutness.

*†1387. PETASITES FRAGRANS Presl. Alien. Hortal. Weisdale.

1384. TUSSILAGO FARFARA L. Local. Lerwick; Spiggie.

1393. SENECIO AQUATICUS Hill, var. PENNATIFIDUS Gren. & Godr. Boddam; Virkie.

1433. CIRSIUM ARVENSE Scop. Rare. Lerwick.
Var. MITE Koch. Spiggie.

1451. CENTAUREA OBSCURA Jord. Lund, Unst, TATE, as *C.* NIGRA.

*1547. HIERACIUM SOMMERFELTII Lindeb. Rare. Cliva Hill.

1619. H. ZETLANDICUM Beeby. In the place where Mr Beeby discovered it at Benegarth. The grass had just been cut so that most of the specimens were in the hay. A few small plants had escaped. It was at this farmhouse of Benegarth that Mr Beeby stayed for some time and where his original specimen is still preserved.

1621. H. DEMISSUM Stromf., var. PULCHELLIFORME W.R.L. This attractive Hawkweed occurred in some plenty by the river-side at Laxo. This is a new record for the Mainland.

1622. H. PROTRACTUM Lindeb. Rather frequent at Cliva.

1643. LEONTODON AUTUMNALE L., var. TARAXACI (L.). Weisdale; Ronas Hill; Fitful Head; Marrafield.

1645. TARAXACUM NAEVOSUM Dahlst. Lerwick, etc.

1645. T. NAEVOSIFORME Dahlst. Lerwick.

1657. SONCHUS ASPER Hill, var. INDIVISA. Spiggie; Scousburgh.

1658. S. OLERACEUS L. Walls.
Var. LACERUS Willd. Clayval.

1664. LOBELIA DORTMANNA L. Aith Voe; Brou Loch.

1666. JASIONE MONTANA L., forma PALLIDA. Fitful Head.

1685. VACCINIUM MYRTILLUS L. Fruiting at Wadbister.

1691. ARCTOSTAPHYLOS ALPINA Spreng. The altitudinal range of this on Ronas Hill is 200 1300 feet (not 1800 feet, as given in my Flora).

1693. CALLUNA VULGARIS Hull, *var. ERIKAE Graebn. Near Levenwick, etc.

1721. STATICE PUBESCENS (Link) Dr. Very small tufts on Fitful Head.

1724. PRIMULA VULGARIS Huds. Rather frequent and occasionally flowering in August as at Clousta Voe, Whiteness, etc.

1740. TRIENTALIS EUROPAEA L. Bressay.

1741. GLAUX MARITIMA L. Clousta Voe.

1763. GENTIANA AMARELLA L. Scalloway.

1763 (2). G. SEPTENTRIONALIS Dr. = forma MULTICAULIS Lange, p.p. Very abundant about Spiggie; Scousburgh; Sumburgh: Quendale.

1765. G. CAMPESTRIS L. Isbister; Stromfirth; Dales Voe: Aith Voe: Ollaberry; Clousta Voe: Wadbister; Spiggie.
Var. ALBA. Stromfirth, etc.

*†1792. SYMPHYTUM PEREGRINUM Ledeb. Bressay; Isbister.

1805. LYCOPSIS ARVENSIS L. Not unfrequent in oat crops at Weisdale; Ollaberry: Levenwick: Spiggie.

1811. PNEUMARIA MARITIMA Hill. In splendid flower at Urafirth on a strip of shingle, some of the plants being a yard across; Ollaberry; Grutness.

1813. MYOSOTIS PALUSTRIS Hill. Clickimin.
Var. STRIGULOSA Reichb. By Huesbreck Loch; Hillswick.

1814. M. REPENS Don, var. ALBA. Weisdale; near Fitful Head.

1815. M. CAESPITOSA F. Schultz. Spiggie.

1821. M. VERSICOLOR Sm. Weisdale; Quendale.

†1831. VOLVULUS SEPIUM Jung. Bressay, as a garden weed.

*†1833. CONVOLVULUS ARVENSIS L. Garden weed at Bressay on the estate of Mrs Cameron.

1911. VERONICA BECCABUNGA L. Ollaberry.

1924. V. AGRESTIS L. Rare. Bressay.

1926. V. HEDERIFOLIA L. Spiggie

1932. EUPHRASIA BOREALIS Wetts. In astounding quantity and in great beauty on the light sandy soil about Spiggie, near Quendale and on the dunes about Sumburgh House where it is a pest to the grass crops. Its range of colour is considerable—from dark purple through lilac to white, with subtle combinations of colour. It bears out the epithet applied by Kerner to the Eyebright as the "Milky Way."

1935. E. CURTA Fr., var. GLABRESCENS Wetts. Lee of Setter; Marrafield, etc.

1937. E. LATIFOLIA Pursh. Ronas Hill; Clousta.

1939. E. MICRANTHA Reichb. Weisdale; Dalescord; Brou Loch; Aith Voe; Fitful Head; Ronas Hill. = *E. gracilis* Fr.

1940. E. SCOTICA Wettst. Frequent. Dalescord; Aith Voe; Marrafield; Bratta Field; Fitful Head; Brou.

1948. BARTSIA ODONTITES Huds. Rare. Sumburgh.

1949. PEDICULARIS PALUSTRIS L. Weisdale; Aith Voe, etc.

1955. RHINANTHUS MONTICOLA Dr. Fitful Head.

1957. R. DRUMMOND-HAYI Dr. Aith Voe.

1957 (2). R. GROENLANDICUS Chab. Marrafield Water.

1976. UTRICULARIA MAJOR Schmidt. Brou Loch and marshes near,

1980. PINGUICULA VULGARIS L. and perhaps the var. MINOR Koch. Near Marrafield Water.

*†1990. MENTHA LONGIFOLIA Huds. Levenwick, as a relic of cultivation.

*†1993. × M. PIPERITA (L.). In some quantity and completely naturalised along a small stream at Scousburgh. There are the remains of an old corn mill above the place where it grows.

1994. M. AQUATICA L. Huesbreck; Wadbister. Rarely flowering.

2008. THYMUS ZETLANDICUS Ronniger & Druce. Leaves 7-nerved, broadly elliptical, when fully grown 5 mm. long, 3 mm. broad, upper surface very hairy, the lower half of the margin bearing long (up to 2 mm.) cilia. Flowering shoots goniotrichous, upper hairs scattered and patent, almost as long as the diameter of the stem. Capitula large-flowered, 15-18 mm. in diameter. Peduncles closely covered with stiff hairs which are directed obliquely downwards. Calyx with thick nerves, long, villous, glabrous on the dorsal surface. It differs from sub-sp. *Drucei* in its strongly hairy leaves with their long cilia and approaches *T. arcticus* in its occasionally 5-nerved leaves (especially the dwarf forms from Ronas Hill). Scalloway; Fitful Head. As a forma NANA with very small foliage, summit of Ronas Hill.

*†2036. NEPETA HEDERACEA Trev. About crofters' cottages at Levenwick and near houses at Couba. Doubtless an adventive hortal and perhaps once cultivated for medicinal use.

2044. PRUNELLA VULGARIS L., *var. ALBA. Quendale, on a grassy bank.

2056. × STACHYS AMBIGUA Sm. Weisdale; Laxo.

2062. GALEOPSIS TETRAHIT L., var. BIFIDA (Boenn.). Aith Voe; Spiggie, etc.

2073. LAMIUM MOLUCCELLIFOLIUM Fr. Weisdale.

2091. PLANTAGO MARITIMA L., var. LANOSA (Edm.). Weisdale.

Var. PYGMAEA Lange. Fitful Head.

2091. P. EDMONDSTONII Dr. See *Flora Zetl.* 61. To this must, I think, be referred plants which grow in the disintegrated granite of the Ronas Hill summit.

2101. LITTORELLA UNIFLORA Asch. Marrafield Water; Sandwater; Brou Loch; Hillswell Loch, etc.

2124. CHENOPODIUM ALBUM L. Rare. Lerwick.

2144. ATRIPLEX PATULA L. Clousta Voe.
Var. BRACTEATA Wester. Spiggie.

2147. A. HASTATA L. Walls; Clousta; Aith Voe.

2149. A. GLABRIUSCULA Edmondst. Aith Voe; Ollaberry.
Var. BABINGTONII Dr. Urafirth; Ollaberry; Sumburgh.

2175. POLYGONUM PERSICARIA L. Rare. Scalloway; Brou Loch.

2184. P. AVICULARE L., var. LITORALE Koch. Spiggie.

2196. RUMEX LONGIFOLIUS DC. Weisdale; Spiggie.
× R. CONSPERSUS Hartm. Urafirth.

2200. R. OBTUSIFOLIUS L. Lerwick.

2225. EUPHORBIA HELIOSCOPIA L. Rare. Spiggie.

2250. URTICA DIOICA L. A distinct looking plant grew near Quendale with broader ovate leaves with large open teeth.

2251. U. URENS L. Clousta Voe.

*†2267. SALIX PENTANDRA L. Planted at Girlsta. It is the narrow-leaved form.

*†2273. S. VIMINALIS L. Alien. Hortal. Evidently planted, as at Weisdale.

2275. S. CAPREA L. Spiggie.

2276. S. AURITA L. Isbister; Lee of Setter; Laxo.

*Var. MINOR. Ronas Hill; Laxo.
* × VIMINALIS. Laxo.

2278. S. REPENS L. Isbister; Laxo.
*Var. PROSTRATA (Sm.). Fitful Head.
Var. PARVIFOLIA. Spiggie; Ward of Scousburgh.
× AURITA = × S. AMBIGUA Sm. Laxo, with both parents, less hairy than usual.

2285. S. HERBACEA L. At 1470 feet on Ronas Hill; Brattafield.

2295. EMPETRUM NIGRUM L. Clousta Voe, at sea level; Fitful Head, etc.

2326. ORCHIS INCARNATA L., var. PULCHELLA Dr. Whiteness.

2326 (2). O. PRAETERMISSA Dr., var. PULCHELLA Dr. Aith Voe; Wadbister; Marrafield; Weisdale; Scatsa; Bressay.

2326 (3). O. PURPURELLA Steph. Urafirth; Aith Voe.

2327. O. MACULATA L. Weisdale; Aith Voe; Brattafield; Marrafield; Ronas Hill; Fitful Head, etc. Of varying colours but no passages to *O. Fuchsii* which seems to be absent.

2338. HABENARIA GYMNADENIA Dr. Near Boddam.

2340. H. VIRIDIS Br. Weisdale.

2408. SCILLA VERNA L. Abundant. Weisdale; Quendale: Stromfirth; Fethaland; Clousta Voe.

†2415. LILIUM PYRENAICUM Gouan. Alien. Hortal. By a stream near a house. Weisdale.

2429. JUNCUS EFFUSUS L., var. SPIRALIS M'Nab. Fitful Head: many plants approaching it on the moorlands near Lerwick; Petta Water, etc.

2440. J. GERARDI Lois. Virkie.
Var. GRACILIS Dr. Clousta.

[A rush from Urafirth may be *J. alpinus* Vill. or belong to the above but the fruits are immature.]

2448. J. TRIFIDUS L. Very rare. Only on the top of Ronas Hill.

2449. JUNCOIDES SYLVATICUM (Huds.). Marrafield Water; Cliva; Wadbister ravine; on a holm in Punds Water; Fitful Head.

2458. J. SPICATUM (L.) Dr. Very rare on Ronas Hill as a small form.

2464. SPARGANIUM SIMPLEX L., var. LONGISSIMUM Fr. Probably this, but barren, in Billister Loch.

2465. S. NATANS L. (*affine*). Pettadale.

2483. TRIGLOCHIN PALUSTRE L. Wadbister.

2485. POTAMOGETON NATANS L. Often with narrower leaves than the English plant.

2486. P. POLYGONIFOLIUS Pourr., var. ERICETORUM Syme. This is often found among the wet turf on the hillsides.

2493. P. GRAMINEUS L. Spiggie; Brou Loch.

2495. P. NITENS Web. Brou Loch.
*Var. SUBINTERMEDIUS Hagstr. Spiggie.

2502. P. PERFOLIATUS L. Loch of Hostigates; Sandwater; Brou Loch.

2512. P. PECTINATUS L. Aith Voe; Hillswell Loch.

2513. P. FILIFORMIS Pers., *forma MAJOR Tis. Brou Loch; Loch Spiggie; Loch Tingwall.

2516. RUPPIA ROSTELLATA Koch. Burra Voe; Whiteness Voe.
Var. NANA Syme. Whiteness Voe.

2520. ZOSTERA MARINA L. Whiteness Voe. Beeby only saw the var. *angustifolia* in Zetland but the *type was abundant here and the waves had piled up a mass of it along the coast.

Var. ANGUSTIFOLIA Hornem. With the above.

2529. ELEOCHARIS PALUSTRIS Br. Two feet high near Boddam; Clumlie Loch.

2529 (2). E. UNIGLUMIS Schultes. Spiggie.

2530. E. MULTICAULIS Br. Ollaberry; Ronas Voe.

*2531. E. ACICULARIS Br. This is practically a new county record since Beeby's Queyhouse Loch specimen is a submerged form of *Juncus bulbosus.* I dredged it in small quantity but barren from Brou Loch and Loch Spiggie in 1924.

2539. SCIRPUS PAUCIFLORUS Lightf. Aith Voe.

2554. SCHOENUS NIGRICANS L. Aith Voe, with its var. NANUS Lange.

2564. CAREX INFLATA Huds. Laxo, etc.

2572. C. BINERVIS Sm. Fitful Head, etc.

2575. C. FULVA Host. Dalescord; Aith Voe.

2576. C. FLAVA L., var. OEDOCARPA Anders. Clousta Voe; Aith Voe; Ronas Hill.

× C. XANTHOCARPA Dég. Aith Voe.

2576 (2). C. LEPIDOCARPA Tausch. Stromfirth; Weisdale; Wadbister.

2587. C. PILULIFERA L. Dalescord; Laxo; Collafirth.

2591. C. PANICEA L. Lee of Setter; Brattafield; Aith Voe.

2608. C. LEPORINA L. After *diversicolor* and *Goodenowii* the commonest sedge. Lerwick; Clousta Voe; Ronas Voe; Boddam; Spiggie; Quendale.

2621. C. ARENARIA L. Quendale.

2625. C. INCURVA Lightf. Spiggie, among the dunes, locally abundant; Sumburgh, plentiful; in abundance about Hillwells

Some fine specimens, nearly six inches high, at Spiggie may go to the *var. ERECTA Lange.

2628. C. PULICARIS L. Cliva; Channer Wick; Clousta Voe; Isbister.

2629. C. DIOICA L. Aith Voe.

*2651. PHALARIS CANARIENSIS L. Alien. Foreshore, Grutness.

2655. P. ARUNDINACEA L. Not rare as the var. or forma* VIRIDIS. Lerwick; Spiggie; Quendale; near Fitful Head.

2668. ALOPECURUS GENICULATUS L. Burra Voe, etc.

2673. PHLEUM PRATENSE L. Quendale, Spiggie, as the var. INTERMEDIUM (Jord.), which may be an introduction.

2684. AGROSTIS ALBA L., var. STOLONIFERA (L.). Aith Voe; Wadbister.
Var. COARCTATA (Hoffm.). Quendale, etc.
Var. MARITIMA Meyer. Quendale.

2685. A. CAPILLARIS L., var. PUMILA (L.) Dr. Weisdale; Brattafield.

2687. A. CANINA L. Brou Loch.
Var. MUTICA (Gaud.) Dr. Spiggie.

2702. AMMOPHILA ARUNDINACEA Link. Quendale.

2709. DESCHAMPSIA CAESPITOSA Beauv., var. BREVIFOLIA (Parn.). Fitful Head.

2711. D. SETACEA Hack. In a small pool on the east side of Ronas Hill.

2712. D. FLEXUOSA Trin. Laxo, with large florets.

2714. HOLCUS LANATUS L., var. ALBOVIRENS Reichb. Spiggie.

†2719. AVENA STRIGOSA Schreb., var. ORCADENSE (Marquand). Aith Voe; Urafirth; Wadbister; Burra Voe; Spiggie; Clayval; Levenwick.

†2720. A. SATIVA L. Lerwick; Spiggie; Grutness.

2722. A. PUBESCENS Huds. Stromfirth.

2724. ARRHENATHERUM ELATIUS M. & K. Spiggie.

2725. A. TUBEROSUM (Gil.) Dr. Walls; Wadbister.

2732. SIEGLINGIA DECUMBENS Bernh. Aith Voe.

2733. PHRAGMITES PHRAGMITES (L.). Delete the Dunrossness locality.

2738. CYNOSURUS CRISTATUS L. Weisdale.

2745. MOLINIA CAERULEA Moench, var. DEPAUPERATA (Lindl.). Whiteness; Aith Voe.

Var. MINIMA Rabenh. Whiteness.

2746. CATABROSA AQUATICA Beauv. Brou Loch; Tolob. Very local.

2759. POA IRRIGATA Lindeb. Pettadale.

2761. P. TRIVIALIS L., var. SEPTENTRIONALIS Dr. Urafirth; Spiggie.

2772. GLYCERIA FLUITANS Br. Clickimin; Quendale, etc.
Var. TRITICEA Fr. Sandwater.

2774. G. DISTANS Wahl. Lerwick; Boddam.
Var. PROSTRATA Beeby. Lerwick; Catfirth.

2776. G. MARITIMA Wahl. Walls; Aith Voe; Garths Voe; Clousta Voe.

2785. FESTUCA RUBRA L., *var. ARENARIA Osb. Spiggie, teste HOWARTH.
Var. PRUINOSA = GLAUCESCENS (Hack.). Spiggie.

2787. F. OVINA L., var. *SUPINA Hack., forma VIVIPARA. Dalescord; Fitful Head, etc.

2811. BROMUS HORDEACEUS L. Whiteness; Quendale.

2827. AGROPYRON JUNCEUM Beauv. Spiggie.

2830. A. REPENS Beauv., var. LEERSIANUM Beauv. Ollaberry.

2855. ELYMUS ARENARIUS L. Ollaberry; Quendale.

2868. EQUISETUM SYLVATICUM L. Dalescord; Spiggie.

2878. BLECHNUM SPICANT With. Ronas Hill; Channer Wick.

2885. ASPLENIUM ADIANTUM-NIGRUM L. Ronas Voe; Cliva.

2889. ATHYRIUM FILIX-FOEMINA Roth. Boddam, locally plentiful; Channer Wick; Wadbister.
Var. CONVEXUM Newm. Channer Wick.

2896. DRYOPTERIS FILIX-MAS Schott. Laxo, abundant.

2899. D. ARISTATA Dr. Wadbister; Laxo; Marrafield Water.
Var. ALPINA Moore. Fitful Head; Bratta Field.

2907. POLYPODIUM VULGARE L. Marrafield Water.
Var. BREVE Lange. Fitful Head.

2919. BOTRYCHIUM LUNARIA Sw. Quendale; Clayval; Ward of Scousburgh.

2924. ISOETES LACUSTRIS L. Spiggie; Brou Loch.

2927. I. ECHINOSPORA Dur. Brou Loch.

2931. LYCOPODIUM SELAGO L. Dalescord; Brattafield.

2932. SELAGINELLA SELAGINOIDES Link. Aith Voe; Wadbister; Clousta; Weisdale; Fitful Head.

2934. NITELLA OPACA Ag. Brou Loch.
*Var. BRACHYCLEMA Gr. & B.-W. Asta; Tingwall; Spiggie and Brou Lochs. In the last place with intermediate forms. It is liable to be mistaken for *translucens*, so large are the main stems.

2943 (2). TOLYPELLA NIDIFICA Leonh. Still in small quantity in Huesbreck Loch.

2949. CHARA VULGARIS L. Sandwater; Stromfirth; Wadbister; Busta Voe.

2950. C. CONTRARIA Braun. Spiggie.

2955. C. ASPERA Willd. In immense quantity in Brou Loch; Loch Spiggie.

2958 (2). C. DELICATULA Braun. The "robust tufted form" alluded to in *Fl. Zetl.* p. 90 as growing on the margin of Tingwall and Asta Lochs is the *var. ANNULATA recently described by Canon Bullock-Webster and Mr J. Groves.

AN IMPORTANT QUESTION.

(CONTINUATION.)

E. ALMQUIST.

In the *Report* for 1922 p. 807 I drew attention to the assault of some mendelists on the Linnean species. The allogams must be hybrid, they pretend, without regard to nature or literature. Already a long time ago Alexis Jordan treated this question experimentally and on a large scale. Jordan found the spontaneous small species constant in culture and discovered even that they do not cross spontaneously although growing in society. His discovery is very interesting but ought not to be generalised. These mendelists shut the eyes also to the results of De Vries' studies, not to mention also Linné's great experience.

In nature, I think, the constant forms take the lead in most groups plainly, while they have greatest chance to survive in a hard concurrence. Some groups behave quite differently. That was observed already by Linné.

Every new fact is welcome but faulty conclusions, with high pretentions, have no place in science. It is erroneous to think spontaneous and cultivated plants the same. In gardens and agriculture true selection rules. Man protects and selects the useful forms. Other factors rule in nature and long periods have fulfilled the work. The wild Linnean species are natural and created without human arbitrariness.

Speculative species may also have great value, but the different unities must not be confounded. It must be examined how far the new terms genotyp, biotyp, pure lines correspond to the older terms collective and small species. Nature's unities cannot be changed and will always keep their worth.

The pure lines should be the only sure constant forms. On the contrary all spontaneous plants, the autogams as much as the allogams, must be cultivated in order to prove their constancy. Many groups of spontaneous allogams keep without doubt their constancy quite as surely as the autogams in nature.

The floras must indicate the difference between occasional crossing and old hybrids, between fertile and sterile hybrids, between forms that everywhere produce hybrids and forms that in some districts are quite constant, as for instance *Quercus Robur* in Sweden.

POTAMOGETON LANCEOLATUS SMITH.

ARTHUR BENNETT.

English Botany, t. 1895, February 1, 1809. Drawn from specimens gathered by Rev. H. Davies, August 1808. "Lakes of N. Wales."

This habitat seems strange as Rev. H. Davies in his specimens to Sir J. E. Smith at the Linnean Society gives, "Between Bodafan and Lligwy, Anglesea;" but in others to Dawson Turner (Kew Herb.) he gives "Lakes of N. Wales." Mr C. Bailey in the *Record Club Report* for 1875 p. 138 gives the actual place as "Growing in patches with *P. gramineus* (*heterophyllus*) and *P. perfoliatus* in a small brook (the River Lligwy) on Rhôs Lligwy, a quarter of a mile south of the New National School." The plant was gathered "here and again" until Babington in the *Journal of Botany* 1881. p. 54 gave a note on it. On this Mr Griffith of Bangor paid several visits to the station even as late as October to try and obtain fruits. but none had been produced.

On August 4th, 1880, I found the plant in a ditch on Burwell Fen, Cambridgeshire, growing with *P. heterophyllus*, the ditch being lined with *Scirpus acicularis* L., in all stages of growth and flowering. When dried I took a good specimen to Kew. Showing it to Mr Baker he asked where I found it. On telling him he said " No, can't be *lanceolatus*, only *heterophyllus*." Rather crestfallen I took it to Prof. Oliver who followed Mr Baker's dictum. Still not satisfied I asked if Sir Joseph Hooker was there. He was, and I took it to him. He said " But have you or Baker or Oliver had the specimens out of the Herbarium. I said " No." He then went with me, got them out, and after looking at them said, " Most certainly the same, and a good find. Take up the genus, we know nothing about it, and we will help you." That is how I came to study Potamogeton. There is not much in it, only this, it shows how kindly disposed a botanist of Sir Joseph Hooker's position could be to a tyro.

Naturally enough when I wrote to Prof. Babington he doubted it (9/10/1880); but on 15/10/1880 he wrote, " Most certainly I was very sceptical about it; but I am now convinced that your plant is the same as the Angelsea one." I planted specimens in a small pond in my garden. These flourished remarkably and in a few years I had 200 specimens dried. These I distributed over Europe with a request that if the recipients had anything like it, would they communicate. None had but Nyman suggested " it might be a dying-out species." After many trials I succeeded in making it fruit, by placing glass on cork under the plants. The fruit was different to any known species in the genus.

The first to suggest its hybrid origin were Messrs Beeby and Fryer and after watching and drying it month after month I agreed with them. In Europe it had been looked on as something unknown. Chamisso and Schlechtendahl in *Linnaea* 1827, p. 233 remark "*P. lanceolatus* (Sm.) Eng. Bot. t. 1985 est *P. lanceolatus*, species recognescenda."

In the forties Besser, Gorski and Wolfgang distributed many specimens of the genus, and in the Vienna Herbarium there is one named by Gorski, " *P. lanceolatus* Sm.* This is a slender specimen of *P. alpinus* Balb.

Fries Mant. 3, 17 (1842) under *P. nigrescens* Fr., " *P. lanceolatus* Wilson in Hook Br. Fl. iv., p. 70, ? optime praeter spicam."

**Ann. Nat. Hofm. Wien*, vii., 290, 1892.

and adds "spica densiflora elongata, cylindrica (i.e. *nigrescens*) (nec elliptica, ut in *P. lanceolato*) &c." Hooker, quoting Wilson (ed. 5, 341, 1842), "Floating leaves are always found where the current is slow. The chain-like reticulations are only distinguishable near the midrib on the submersed leaves, the floating leaves being elegantly overspread by them."

After many years suggestions were made that a nearly similar plant was gathered by Gillot in France, i.e. "*P. rivularis*." It was certainly near to, and must be placed under it. I was indebted to Dr Gillot for a specimen from "The Rivière de Cure entre Montsauche et Gouliex (Nièvre), Saône et Loire, August 1883;" for another to the Paris Herbarium, and a third to M. Magnier of St Quentien. Fryer considered the English plant to be *heterophyllus* × *pusillus*, and Ascherson & Graeb. Syn. Fl. Mitt. Europ. 1, 348, 1897, make *P. rivularis* as "*gramineus* × *mucronatus*" (*heterophyllus* × *Friesii*).

Then in the Herb. Boissier I found a specimen, "*Potamogeton* in paludibus, Corfu, August 4, 1879, à Letourneux," Corfu being one of the Ionian Islands. The next came from Dr Fischer of Berne, —"Berne, Ditch, Eiholmoss, with *P. densus* L. and Charas." This is a more slender plant than either the French or English and may be called *P. helveticus*. Ascherson & Graeb., *l.c.*, seem to regard a plant from Lauenberg, ex Nolte, as *lanceolatus*, but in the 1923 edition they ignore it. In Fryer's *Potamogetons of the British Isles*, plate 39 excellently represents the Burwell plant.

Names that have been placed to it are as under:—

P. lanceolatus, *β subnatans* Roemer & Schultes Syst. iii., 507, (1818).

P. lanceolatus, *β fluitans* Hook. Br. Fl., ed. 3, 77, (1835).

P. lanceolatus, v. *homophyllus* Macreight Man. Brit. Bot. 224, (1837).

P. lucens, v. *lanceolatus* Benth. Hand. Brit. Flora, ed. 1, 493, (1858).

P. rivularis Gillot Bull. Soc. Dauph., t. 14, 584, (1887).

P. rufescens Schrad., sub-sp. *rivularis* Nyman Consp. Fl. Europ., Supp. 287, (1890).

I feel sure from cultivating the plant so long, and from the floating submerged leaves that *heterophyllus* and not *coloratus* is one of the factors of the English plant.

The Rev. H. Davies in his Welsh Botanology (1813) gives as its Welsh name " Dyfr-llys-cut-ddail."

CANON JOHN VAUGHAN AND HIS HERBARIUM.

G. Claridge Druce, D.Sc., LL.D.

In *Rep. B.E.C.* 708-712, 1922 I gave an obituary of this graceful writer, who was a devoted lover of flowers and their haunts. Through the kindness of his widow, his Herbarium has been given to me, and I have been through it in order to incorporate it with my own collection. Each sheet has been duly labelled " Herb. Canon J. Vaughan." The collection is a fairly representative one, but Canon Vaughan preferred to select typical specimens which he carefully dried and mounted. Varieties and forms he ignored. The plants were on the whole accurately named and in many cases were from classic habitats. A few of the new or more interesting localities are given below. In some cases they are new county records. North Hants gives the greater number of specimens but there are others from Portchester, Landridge and Droxford as well as from his father's home at Finchingfield in Essex, whence he paid his devotions at the shrine of John Ray at Black Notley and gathered Good King Henry and the Ground Ivy from his tomb. His kindness to Wychamists is evidenced by the Orchids which he gathered in their company. He had a wide circle of correspondents who sent him plants for identification or to fill up gaps in his collection. His Herbarium dates from 1885-1918. Its examination has been at once a pleasant and a sad task since it brought back memories of delightful excursions and conversations and has raised regrets that such an urbane and kindly colleague is no longer present in our ranks to stimulate others to follow his good example.

ANEMONE NEMOROSA L., represented also by the var. PURPUREA DC. from Monk Wood, Alton, N. Hants.

†A. APENNINA L. Near Lungmore, Hants.

MYOSURUS MINIMUS L. Gosport, S. Hants.

ADONIS ANNUA L. Hasham Hill, Wilts, *G. Marryat.*

RANUNCULUS AURICOMUS L. Thedden Churchyard, N. Hants, a form with perfect petals.

R. ACER L., var. BORAEANUS (Jord.). Finchingfield, Essex, 1884.

AQUILEGIA VULGARIS L. Between Hissenford and Downferry, E. Cornwall, 1887, a white-flowered form.

†CAMMARUM HYEMALIS Greene. Manor Farm, Faringdon, Alton, N. Hants, 1886.

†DELPHINIUM AJACIS L. Dunwich Priory, E. Suffolk, 1886.

†EPIMEDIUM ALPINUM L. Knypersley, Staffs, *H. E. Fox*, 1887.

†CAPNORCHIS CANADENSIS (DC.) Dr. Newland Vale, Cumberland, 1886, *H. P. Brunell*, wrongly named *Fumaria solida.*

PAPAVER RHOEAS L. Southwold, E. Suffolk. This is the var. CAUDATIFOLIUM Fedde.

COCHLEARIA ALPINA Sw. Summit of Cairntoul, S. Aberdeen, *H. E. Fox*, 1885.

ARABIS PETRAEA Lam. At 2000 ft. near Torridon, W. Ross. I have already reported it from Ben Eay in this area.

A. PERFOLIATA Lam. Worldham, near Alton, N. Hants, 1885.

RADICULA SYLVESTRIS Dr. Winchester Meads, S. Hants. A N.C.R.

EROPHILA VERNA Meyer. Alton, N. Hants, 1885. This is good PRAECOX DC.

†HESPERIS MATRONALIS L. River side, Kingsley, N. Hants, 1887.

ERYSIMUM CHEIRANTHOIDES L. Portchester, S. Hants; Kingsley, Selborne, N. Hants. Probably spreading in the county. Townsend (*Fl. Hants*) says very rare.

VIOLA HIRTA L., var. PROPERA (Jord.) Gillot. Alton, N. Hants.

†DIANTHUS ARMERIA L. Auldgirth, Dumfries, *J. Fingland*, 1886. Given as an escape in the *Flora of Dumfries* for 72, 73 & 74.

*D. DELTOIDES L. Parkdown, Oakley, N. Hants, *Miss M. A. Scott*, 1914. New to the County. See *Rep. B.E.C.* 862, 1914.

†SILENE DICHOTOMA Ehrh. In a clover field, Soberton, S. Hants, 1905.

S. NOCTIFLORA L. Botley, S. Hants, " very rare in the county."

S. GALLICA L. Rogate, W. Sussex.

†S. CRETICA L. Wycor, Portchester, S. Hants, 1894, with Flax.

SAGINA NODOSA L. Dunwich, East Suffolk; Bude Downs, Cornwall. Both the var. MONILIFORMIS Lange.

MONTIA LAMPROSPERMA, var. BOREO-RIVULARIS Dr. Shevenance, Co. Antrim, *Praeger*, labelled *M. fontana*, var. *rivularis*.

HYPERICUM PERFORATUM L. Alton, N. Hants. The var. ANGUSTIFOLIUM DC.

†MALVA PUSILLA With. Portchester, S. Hants, 1893, named by E. F. Linton as *nicaeensis*, but it is not that species.

†GERANIUM PHAEUM L. Ely, Cambridge, 1886.

ERODIUM PIMPINELLAEFOLIUM Sibth. Southwold, Suffolk.

†IMPATIENS PARVIFLORA DC. St Osyth's, N. Essex.

†MELILOTUS INDICA All. Kelvedon, Essex. The specimen is labelled *officinalis*.

†COLUTEA ARBORESCENS L. St Helen's Spit, Isle of Wight, 1893. This precedes the Essex specimen gathered by the Rev. P. T. Corfe in 1903. Of course it is a planted shrub.

†LOTUS SILIQUOSUS L. Forest of Bere Farm, S. Hants, 1886.

VICIA LATHYROIDES L. Titchfield, S. Hants.

PRUNUS INSITITIA L. Finchingfield, N. Essex.

POTENTILLA REPTANS L. Alton, N. Hants, 1885. This is the var. MICROPHYLLA Tratt.

ALCHEMILLA VULGARIS L. Finchingfield, N. Essex, 1885. This is the var. MINOR Huds.

PYRUS MALUS L., var. MITIS Wallr. Alton, N. Hants; Machynlleth, Montgomery, 1890.

†P. PINNATIFIDA Ehrh. About Hall Park, near Shalford, N. Essex. Of course a planted tree.

CHRYSOSPLENIUM ALTERNIFLORUM L. Finchingfield, N. Essex.

†SEDUM DASYPHYLLUM L. *Portchester Castle, S. Hants, 1907.

ANGELICA SYLVESTRIS L. Alton, N. Hants. This is the var. DECURRENS Fisch.

†AMMI MAJUS L. Felstead, Essex, 1884, *Gepp*.

†LONICERA CAPRIFOLIUM L. Finchingfield, N. Essex, 1886.

PETASITES PETASITES (L.) Karst. Near Rickmansworth, ? Herts or Middlesex, 1890, *F. W. Ward*. This is the var. HYBRIDA (L.) Dr., the sub-female plant.

†DORONICUM PLANTAGINEUM L. Fifield, Finchingfield, Springfield, Great Baddow, N. Essex, 1886.

†D. PARDALIANCHES L. Great Baddow, N. Essex, *G. Whyley*.

†Senecio sarracenicus L. Ashford, near Petersfield, N. Hants.

†Crepis setosa Hall f. Finchingfield, N. Essex, 1885.

Hypochoeris glabra L. Teddington, Middlesex.

Sonchus oleraceus L. Alton, N. Hants. This is var. lacerus = ciliatus (Lam.).

S. asper Hill. Alton, N. Hants. This is the var. laciniatus Wallr.

†Campanula rapunculoides L. Hedingham, N. Essex, on the railway, 1881.

C. Trachelium L. Alton, N. Hants, the white-flowered plant.

†Legousia Speculum-Veneris (L.) Fisch. Lillie Hoo, Hitchen. Herts. 1907.

†Cyclamen hederifolium Ait. Plantation near Inworth Rectory, N. Essex, 1892, quite established.

Anagallis arvensis L. Alton, N. Hants, the pale-flowered form.

A. femina Mill. Portchester, S. Hants; in John Ray's Orchard at Black Notley, N. Essex.

†Nympheoides Nympheoides (L.). Daventry Reservoir, Northants, 1887, *H. Powell*, but it was planted there by my friend, Col. Clarke.

Centaurium pulchellum Dr. One of the specimens is possibly a hybrid with *C. vulgare*.

†Lappula Lappula (L.). Landridge, N. Hants, 1900.

?†Pulmonaria officinalis L. Copse at foot of Worldham Hill, N. Hants, " apparently wild. 1894.

†Polemonium caeruleum L. Chalk-pit, Itchin Abbas, Hants, 1888; Machynlleth, Montgomery, 1888.

†Solanum rostratum Dunal. Near Bulfield Mill, N. Essex, 1898.

Linaria Linaria Karst., var. peloria Dr. Droxford, Hants, 1907.

L. repens × Linaria. Railway embankment, Kingsworthy, N. Hants, *E. Williamsi*, a fine hybrid with large flowers.

*Orobanche purpurea Jacq. Shedfield, S. Hants, *D. Marryat*. Practically new to the mainland, since the Goodyer locality near Alton has not produced it for many years.

Mentha spicata L. Exmouth, Devon, 1884.

M. verticillata, var. subspicata Becker. Frensham Pond, Surrey, 1889.

Salix repens L., var. fusca. Deal, E. Kent.

ORCHIS PRAETERMISSA Dr. Liss, Hants, 1884, labelled *O. latifolia* L.; Alton, N. Hants, 1884, labelled *O. incarnata* L.; Finchingfield, N. Essex, also labelled *O. incarnata*.

Var. PULCHELLA Dr. Upper Teesdale, Durham. *H. E. Fox.*

O. FUCHSII Dr. Avington Park, N. Hants, labelled *O. maculata* L.

O. MORIO. Finchingfield, Great Baddow, N. Essex; The Lyth, Selborne, N. Hants. These come under forma CHURCHILLII.

OPHRYS APIFERA Huds. Bodean Downs, Hants, 1898, the white-flowered plant.

ACERAS ANTHROPOPHORA Ait. Shanklin Down, Isle of Wight; near Winchester, 1907; Terling, N. Essex.

HABENARIA GYMNADENIA Dr. Bodean Down, Hants, the white-flowered plant.

†NARCISSUS BIFLORUS Curt. Langley, Herts, 1887; copses about Torquay, S. Devon, 1894.

LEUCOJUM AESTIVUM L. Southwick, Titchfield River, S. Hants, 1894.

†ORNITHOGALUM UMBELLATUM L. Portchester, S. Hants.

*MUSCARI RACEMOSUM Lam. Field three-quarters of a mile away from a house near Tachborne Downs, N. Hants, abundantly in 1917.

†TULIPA SYLVESTRIS L. Froyle chalk-pit, N. Hants, quite naturalised; Portchester, S. Hants.

POTAMOGETON DENSUS L. Finchingfield, N. Essex, as the var. SERRATUS (Huds.).

ZOSTERA MARINA L. Horsea Isle, S. Hants. This is the var. ANGUSTIFOLIA Horn.

CAREX EXTENSA Huds. Southport, Lancs. *D. W. Jephson.* The specimens are labelled *C. Oederi* which also grows there.

C. LEPIDOCARPA Tausch. Lynch Hill, Alton, N. Hants, labelled *C. flava.*

C. FLAVA L. Viverton Downs, Cornwall, 1887. These are the var. OEDOCARPA And.

C. LEPORINA L. Prince's Wood, Worldham, N. Hants. These are the var. LONGIBRACTEATA Peterm., which suggests a diseased form rather than a variety.

†PANICUM ISCHAEMUM Schreber. Portchester, S. Hants, labelled *P. glabrum.*

†P. SANGUINALE L. Gosport, S. Hants, 1880.

PHLEUM PRATENSE L. Alton, N. Hants. This is var. INTERMEDIUM (Jord.) Dr.

DEYEUXIA NEGLECTA Kunth. Oakmere, Cheshire, *Herb. Steuart;* Watton, Caithness, *F. W. Ward.* These are both wrongly labelled *strigosa.*

*AVENA PRATENSIS L. Home Park, Hampton Court, Middlesex, *R. S. Hill*, 1843. Practically a record for the County.

MOLINIA CAERULEA Moench, var. DEPAUPERATA Lindl., or near it. Shortheath, Alton, N. Hants, 1888.

FESTUCA RUBRA L. Southwold, E. Suffolk; Alresford, N. Hants, as *pratensis;* Alton, N. Hants, as *duriuscula;* Portchester, S. Hants.

Var. BARBATA Hack. Southwold, E. Suffolk. =F. DUMETORUM (L.) Howarth.

Var. ARENARIA Osb. Exmouth, S. Devon.

f. SUBGLABRA How. Lowestoft, E. Suffolk, 1886; Yarmouth, E. Norfolk, 1892.

F. OVINA L., f. VIVIPARA. Ben Lomond, 1888; Cader Idris, Merioneth, 1890.

× AGROPYRON HACKELII Dr. Southwold, E. Suffolk, labelled *repens.*

LOLIUM PERENNE L. Finchingfield, N. Essex. This is the var. TENUE (L.) Syme.

*ASPLENIUM SEPTENTRIONALE Hoffm. Dylife, Montgomery, 1890.

The foregoing extracts show that the critical genera formed no portion of the study of Canon Vaughan, *Capsella*, *Euphrasia*, etc. being represented by solitary examples. Nor were the Roses, Brambles, or Hawkweeds collected. He mainly worked with Bentham as a guide. Further notes will appear on the Thymes and Mints.

CORRECTED NAMES OF ROSES DISTRIBUTED IN THE PAST THROUGH THE BOTANICAL EXCHANGE CLUB OF THE BRITISH ISLES.

Lt.-Col. A. H. Wolley-Dod.

In the following list are set forth the names which I have given in the latest revise of my herbarium to all the specimens of Roses therein which have passed through the Botanical Exchange Club.

The localities are given as shortly as possible in order to save space, but it is hoped they will be intelligible.

The list is arranged in the alphabetical order of the names as they appear in the Reports, though these do not invariably agree with those on the labels. Thus a Rose named *R. arvensis*, var. *bibracteata* would appear under " a," but if named *R. bibracteata* it would come under " b." Roses sent unnamed appear at the end of the alphabetical arrangement.

The vice-county numbers are given in brackets after the locality. The year of the Report in which the Rose appears is that of the date of gathering, or if it differs, is cited in brackets after the collector's name. It has not always been easy to connect the specimens with any particular Report, and where there is doubt, a "?" follows the date. Where I have been unable to trace the Report at all, and for all Roses collected before 1875, I have inserted "(N.R.)" indicating that I can trace no record.

I have avoided all but the briefest comments or qualifications of the names given, since it is difficult to confine these to the space available.

It must be borne in mind that even the best rhodologists have sometimes distributed a mixture. There is therefore no certainty that the names I have given apply to every specimen distributed.

R. affinis. Ripon (64), July 1879, Nicholson (N.R.).—R. TOMENTELLA, var. SCLEROPHYLLA. This is the rose named *R. affinis* by Christ, but is not the same as f. *Nicholsoni*, as stated in the *Report* for 1879, p. 12.

R. agraria. Coughton (36), August 7, 1909, Ley.—Correct but my specimen is labelled *R. Lemaitrei.*

R. agrestis. Hog's Back (17), August 17, 1878, Groves (N.R.).—Var. ARVATICA. Specimens from this locality vary greatly and some of them might be labelled var. TYPICA.

R. agrestis. Gloddaeth (49), July 1887, Griffith.—Var. ARVATICA towards var. TYPICA. Specimens from this station also vary greatly.

R. agrestis, var. *inodora.* Whatcote (38), August 1, 1887, Bagnall.—R. CANINA, var. BLONDAEANA.

R. andegavensis. Sellack (36), September 22, 1883, Ley.—R. DUMETORUM, var. INCERTA.

R. andegavensis. Edge Green (58), July 15, 1905, W.-Dod.—R. DUMETORUM, var. INCERTA, f. SUBGLABRA.

R. andegavensis, var. *agraria.* Twinstead (19), September 1922, Druce.—Correct.

R. Andrzeiovii. Dolygaer (42), July and September 1908, Ley.—R. OMISSA, var. SHERARDI.

R. Andrzeiovii. Cwm Nes (43), September 10, 1908, Ley.—R. OMISSA, var. SHERARDI.

R. Andrzeiovii, var. *pseudo-mollis.* Reeve Hill (36), August 29, 1910, Ley.—R. OMISSA, var. SHERARDI, f. SUBMOLLIS, near typical var. SHERARDI.

R. Andrzeiovii, var. *pseudo-mollis.* Escley Valley (36), September 9, 1907, Ley.—Correct.

R. arvatica or *Watsoni.* Jamestown (106), July 29, 1890, Bailey.—R. CORIIFOLIA, var. CELERATA, a form without subfoliar glands.

R. arvensis, f. Quenby (55), August 1906, Horwood (1908?).—f. SCABRA.

R. arvensis, var. Geddington Chase (32), August 1, 1910, Ley.—Towards f. MAJOR.

R. arvensis, var. *bibracteata.* Sheviok (2), July 12, 1875, Briggs.—Var. VULGARIS or perhaps a CANINA hybrid.

R. arvensis, var. *bibracteata.* Sellack (36), August 16, 1904, Ley. Var. OVATA.

R. arvensis, var. *gallicoides.* Caton (60), August 1900, Wheldon (1911?).—f. MAJOR or perhaps var. GRANDIDENTATA.

R. arvensis, var. *gallicoides.* Brampton Abbots (36), July 1911, Riddelsdell.—Correct.

R. arvensis, var. *gallicoides*. Stydd (57), October 3, 1888, W. R. Linton.—Correct.

R. arvensis, var. *gallicoides*. Chesterton Wood (38), September 1890, Bromwich.—Correct.

R. arvensis, var. *setosa*. Yeavely (37), September 28, 1887, Towndrow.—Var. GALLICOIDES.

R. Beatricis. Malden (17), June and September 1911. Britton.—R. TOMENTELLA, var. ROTHSCHILDII.

R. Borreri. Edge (58), August 15, 1907. W.-Dod.—Correct. My No. 1114 from Grange Farm, was, I believe, distributed wrongly labelled *R. caesia*, but it was from the same bush.

R. Borreri, var. Wadenhoe (32), July 1910, Ley.—R. TOMENTELLA, var. ROTHSCHILDII.

R. Burnati. Coughton (36), August 7, 1909, Ley.—R. DUMETORUM, var. INCERTA.

R. canina. Brailsford (57), June and September 1889. W. R. Linton (1893?).—Var. DUMALIS.

R. canina, var. S. Croxton (55), September 1907, Horwood.—Var. TOURANGINIANA.

R. canina, var. *andegavensis*. Pill (6), June and September 1885. White.—Var. VERTICILLACANTHA.

R. canina, var. *andegavensis*. Sellack (36), September 11, 1885, Ley.—R. DUMETORUM, var. INCERTA, f. LAEVISTYLA.

R. canina, var. *andegavensis*. St Weonards (36), July 19, 1884, Ley.—R. DUMETORUM, var. INCERTA, f. LAEVISTYLA.

R. canina, under *aspernata*. Dunsfold Common (17), September 13, 1894, Marshall.—f. GLOBOSA.

R. canina, var. *biserrata*. Brampton Abbots (36), August 13, 1909, Ley.—Correct.

R. canina, var. *biserrata*. Trusham (3), May and July 1879, Rogers.—Var. VINACEA.

R. canina, var. *caesia*. Solihull (38), July 1875, Bagnall (N.R.).—R. TOMENTELLA, var. DECIPIENS.

R. canina, var. *celerata*. Spylau (80), September 17, 1879, Brotherston.—R. CORIIFOLIA, var. BAKERI.

R. canina, var. *dumalis*. Cerrig Haffes (42), July 12, 1908, Ley.—Var. RECOGNITA.

R. canina, var. *dumalis*. Odiham (12). June and August 1897, Palmer.—Var. BISERRATA, f. ERIOSTYLA.

R. canina, var. *dumalis*, f. *rubelliflora*. Linton (36), June and November 1908, Ley.— Var. VIRIDICATA, resembling R. SALICIFOLIA Vukot.

R. canina, var. *dumalis* or *subcristata*. Shirley (57), July 16, 1887, W. R. Linton.—Var. LUCANDIANA.

R. canina, var. between *dumalis* and *subcristata*. Shirley (57). August 30, 1888, W. R. Linton (N.R.).—Var. DUMALIS towards var. BISERRATA.

R. canina, var. *fallens*. Davenham (58), June 1911, Hodge.—R. DUMETORUM, var. GABRIELIS.

R. canina, var. *frondosa* × *coriifolia*. Ashbourne (57), September 1888, W. R. Linton.—R. CORIIFOLIA, var. IMPLEXA probably, but perhaps a LUTETIANA form.

R. canina, var. *globularis*. Horsepath (23), July 1923, Druce.—Var. SPHAEROIDEA.

R. canina, var. *hispidula*. Glewstone (36), August 9, 1908, Ley.—R. DUMETORUM, var. INCERTA, f. LAEVISTYLA.

R. canina, var. *implexa*? Yeldersley (57), September 29, 1888, W. R. Linton.—R. DUMETORUM, var. TYPICA.

R. canina, var. *Kosinsciana*. Bull in Oak Lane (55), September 1906, Bell.—Var. ROUSSELII.

R. canina, var. *pruinosa*. Braemar (92), August 10, 1883, W. R. Linton (1883?).—Correct.

R. canina, var. *pruinosa*. Glenshee (89), August 19, 1884, W. R. Linton (N.R.).—Correct.

R. canina, var. *pruinosa*. Glenshee (89), August 2 (1883), E. F. Linton.—Correct.

R. canina, var. *psilophylla*. Longford (57), September 10, 1890, W. R. Linton.—Var. BISERRATA.

R. canina, var. *subcristata*. Strath Ascaig (105 or 106), September 1893, Fox.—Correct.

R. canina, var. *R. viridicata*. Saintfield (1), July 28, 1911, Waddell.—Correct.

R. canina × *micrantha*. Hogtrough Bottom (17), August 7, 1921. Britton.—Correct.

R. canina × *micrantha*. Hogtrough Bottom (17), August 21, 1924, Britton.—Correct.

R. caerulea. Holgate (Yorks), August 1889, Webster (N.R.).—Correct.

R. caryophyllacea. Ashton (32), September 1910 and June 1911, Druce (1911).—R. TOMENTELLA, var. ROTHSCHILDII. [R. ROTHSCHILDII Druce.]

R. Carionii. Gallantry Bank (58), July 27, 1908, W.-Dod.—R. TOMENTELLA, var. BORRERI.

R. celerata. Aysgarth (65), June 1896, Wheldon (1897).—R. CANINA, var. BEATRICIS, a very eglandular form.

R. collina. Calstock (2), July 4, 1879, Briggs (N.R.).—R. DUMETORUM, var. DESEGLISEI, a large-leafleted form.

R. collina. Kew (17 or Hort.?), June 1878, Nicholson (1882).—R. DUMETORUM, var. DESEGLISEI, off type.

R. coriifolia, var. Bradley (57), August 19, 1889, W. R. Linton.—Var. SUBCOLLINA.

R. coriifolia, var. Garve (106), July 27, 1909, Shoolbred [No. 684 A].—f. LINTONI. My own specimen is Marshall's 3369, but is, I believe, the same gathering.

R. coriifolia, var. Yeldersley Lane (57), August 10. 1904, W. R. Linton.—f. LINTONI.

R. coriifolia, glabrate form. Shirley (57), August 27. 1904, W. R. Linton (N.R.).—Near var. WATSONI but probably a new form.

R. coriifolia, var. *Bakeri*. Buckie Braes (88), August 29, 1918. Barclay [No. 25/18] (1919).—f. SETIGERA.

R. coriifolia, var. *Bakeri*. Dumphail (95), August 4, 1898, Marshall.—Var. CELERATA.

R. coriifolia, var. *Lintoni*. Braemar (92), July 27, 1889. E. F. and W. R. Linton (1889 and 1890).—Correct.

R. corymbifera. Bently Wood (2), June and September 1880. Rogers.—R. STYLOSA, var. DESVAUXIANA.

R. Crepiniana. Chelsfield (16), September 14, 1901, Groves.—Correct.

R. Crepiniana. Chelsfield (16), August 28, 1880, Groves (N.R.).—Correct.

R. cryptopoda. Bourne (53), August 22, 1921, Webster.—R. CANINA, var. LUTETIANA, perhaps f. LASIOSTYLIS.

R. cuspidatoides. Aymestry (36), September 19, 1907, Ley.—R. TOMENTOSA, var. PSEUDO-CUSPIDATA.

R. cuspidatoides. Acomb (64), July 1883, Webster.—R. TOMENTOSA, var. PSEUDO-CUSPIDATA.

R. cuspidatoides, var. *britannica.* Aconbury (36), August 14, 1908, Ley.—R. TOMENTOSA, var. TYPICA.

R. cuspidatoides, var. *foetida.* Aconbury (36), August 14, 1908, Ley.—R. TOMENTOSA, var. SYLVESTRIS.

R. Deseglisei. Duckington (58), August 3, 1908, W.-Dod.—Correct.

R. dumalis. Cromarty Firth (106), July 31, 1890, Bailey (N.R.).—R. GLAUCA, var. SUBCRISTATA, f. MYRIODONTA.

R. dumetorum. Burwardsley (58), July 15, 1900, W.-Dod.—Var. ERECTA.

R. dumetorum. Knighton (43), August 8, 1899, W.-Dod.—Var. ERECTA.

R. dumetorum, var. *concinna.* Brampton Abbots (36), July 5, 1911, Riddelsdell.—Var. DESEGLISEI, off type.

R. dumetorum, var. *Deseglisei.* Brampton Abbots (36), August 10, 1908, Ley.—Correct.

R. dumetorum, var. *Deseglisei.* Brampton Abbots (36), August 12. 1909, Ley.—Correct.

R. dumetorum, var. *Gabrielis.* Kilpeck (36), August 5, 1908, Ley.—Var. TYPICA, f. URBICA.

R. dumetorum, var. *hemitricha.* Filton Meads (34), June and September 1919, Roper.—Var. RAMEALIS.

R. dumetorum, var. *incerta.* Ashton Common (6), June and August 1921, Roper.—Correct.

R. dumetorum, var. *semiglabra.* Middlewick (19), June and July 1923, Brown.—Correct.

R. Eglanteria. Arncliffe (64), May 17, 1918, Waterfall (1919).—Quite unnameable, but certainly not EGLANTERIA. Possibly a MOLLIS f.

R. Eglanteria, var. Glen Peebles (78), September 1918, Druce.—Var. APRICORUM.

R. Eglanteria, var. *comosa.* Grey Abbey (1), September 2, 1918. Waddell.—Correct but towards var. APRICORUM.

R. foetida. Runsell Lane (38), August 20, 1881, R. L. Baker.—R. TOMENTELLA, var. OBTUSIFOLIA. (Probably some mixture.)

R. foetida. Penmaenmawr (49), August 1, 1906, W.-Dod.—Var. SCABRIUSCULA.

R. foetida. E. Horsley (17), September 7, 1913, Britton.—Var. BRITTONI.

R. frondosa. Chetnole (9), July 13, 1881, Rogers.—R. DUMETORUM, var. TYPICA, f. URBICA.

R. frondosa. Great Crosthwaite (70), September 16, 1882, Bailey.—R. DUMETORUM, var. HEMITRICHA.

R. glabriuscula. Norton (63), August 1883, Webster.—R. DUMETORUM, var. INCERTA, f. PSEUDO-INCERTA.

R. glauca. Staithes (62), August 1894, Groves (1906).—R. CORIIFOLIA, var. BAKERI, f. LINTONI.

R. glauca f., near *Reuteri.* Yeldersley (57), September 14, 1888, W. R. Linton.—Var. REUTERI.

R. glauca, var. II. Yeldersley Lane (57), August 20, 1904, W. R. Linton.—f. TRANSIENS.

R. glauca, var. II. Shirley (57), September 6, 1904, W. R. Linton. —R. DUMETORUM, var. INCERTA, f. SUBGLABRA.

R. glauca, var. III. Yeldersley Lane (57), August 27, 1904, W. R. Linton (N.R.).—Near var. WATSONI but probably a new variety.

R. glauca, gr. *fugax.* Riv. Almond (88), September 15, 1917, Barclay.—Var. OENENSIS.

R. glauca, gr. *oenensis.* Buckie Braes (88), September 16, 1919 Barclay (1920).—Var. OENENSIS.

R. glauca, var. *transiens.* Tadmarton (23), August 1923, Druce.—Correct.

R. hibernica. Carnlough (1), August 1919, Waddell.—× R. GLABRA.

R. hibernica, var. *glabra.* Strath Brora (107), August 9, 1897, Marshall.—× R. GLABRA.

R. hibernica, var. *glabra.* Great Meols (58), August 22, 1877. Harbord Lewis (N.R.).—× R. GLABRA.

R. hibernica, var. *glabra.* Hoylake (58), August 5, 1899, W.-Dod. —× R. GLABRA.

R. hispidula. Glewstone (36), September 13, 1909, Ley.—R. DUMETORUM, var. INCERTA, f. LAEVISTYLA.

R. hystrix. Dartford Heath (16), August 26, 1894, W.-Dod.—Correct.

R. implexa. Shepperton (21), September 11, 1880, Groves (1906).—R. DUMETORUM, var. ERECTA.

R. implexa. Shepperton (21), July 4, 1887, Groves (N.R.)—R. DUMETORUM, var. ERECTA.

R. inconspicua. Mordiford (36), September 14, 1909, Ley.—Var. ASPERNATA, f. SUBGLOBOSA.

R. insignis. Leatherhead Downs (17), August 8, 1915, Britton (1916).—Var. MEDIOXIMA.

R. involuta f. Selkirk (79), June, August and October 1912, Hayward.—× R. SABINI.

R. involuta var. Auchterarder Station (88), September 5, 1918, Barclay.—× R. BARCLAYI..

R. involuta, var. *Doniana.* Halling (16). May 23, 1893. Marshall.—× R. SABINI.

R. involuta, var. *Doniana.* Woodloes (38), July 1887, Bromwich (N.R.).—× R. SABINI.

R. involuta, var. *gracilis.* Tachbrook (38), July 1887, Bromwich.—× R. SABINI.

R. involuta, var. *Robertsoni.* Kingston (17), Aug. 19, 1879, Groves (N.R.).—Correct.

R. jactata. Wadenhoe (32), August 1910, Ley.—Correct, but off type.

R. Jundzilliana. Lancaut (34), September 26, 1911, Riddelsdell.—R. TOMENTOSA, var. TYPICA.

R. leucochroa. Headley (17), July and August 1917, Britton.—R. STYLOSA, var. CHLORANTHA.

R. leucochroa. Bere Wood (9), July 19, 1887, Rogers.—R. DUMETORUM, var. INCERTA, f. LAEVISTYLA.

R. leucochroa. Trusham (3), July and December 1879, Rogers.—R. DUMETORUM, var. INCERTA, f. LAEVISTYLA.

R. Lucandiana. Askern (63), August 1882, Webster.—Correct.

R. lutetiana, var. *aspernata.* Pill (6), June and August 1922. Roper.—Var. VERTICILLACANTHA, untypical.

R lutetiana, f. *nitens.* Sutton Walls (36), September 14, 1909, Ley.—Var. LUTETIANA. May be NITENS, but difficult to say from a dried specimen.

R. marginata. Solihull (38), July and September 1876, Bagnall.—R. GLAUCA, var. STEPHANOCARPA. Also sent in September 1877.

R. Melvini. Madresfield (37), September 1905, Ley.—Correct. An alien.

R. Melvini. Madresfield (37), April and November 1886, Towndrow.—Correct. An alien.

R. micrantha. Whittlebury Forest (32), July 1922, Druce.— × R. INELEGANS.

R. micrantha. Pensby (58), August 9, 1876, Harbord Lewis (1879).—R. TOMENTOSA, var. SYLVESTRIS. My own specimen is labelled "*Rosa* ——" with *sylvestris* added in pencil.

R. micrantha var. Ivybridge (3), July 13, 1894, Marshall.—Var. TYPICA, but possibly a CANINA hybrid near × R. LATENS.

R. micrantha, var. *ped. nudo.* Egg Buckland (3), 1875, Briggs.—Doubtless var. BRIGGSII. My own specimen dated July 7, 1876, from Shalaford, Egg Buckland, is that variety.

R. micrantha, var. *Briggsii.* Hedzor (37), August 9, 1907, Waddell.—R. TOMENTELLA, var. BORRERI.

R. micrantha, var. *Briggsii.* Woodspring (6), July 15, 1882, White.—R. AGRESTIS, var. ARVATICA.

R. micrantha, var. *Briggsii.* St Thomas's Head (6), August 28, 1882, White.—I have no specimen distributed through the Club, but have one from this station labelled *R. inodora* Fr? June 27, 1881, which I believe is the same and certainly var. ARVATICA.

R. micrantha, var. *hystrix.* Limpley Stoke (7), July 27, 1893, Bailey.—Var. TYPICA but towards HYSTRIX.

R. micrantha, var. *permixta.* Minehead (5), August 27, 1909, Marshall.—Var. TYPICA.

R. micrantha, var. *permixta.* Cadbury Camp (6), June and September 1918, Roper.—Var. TYPICA.

R. micrantha, var. *trichocarpa.* Cadbury Hill (6), October 6, 1919, Roper (N.R.).—Under type.

R. mollis. Caer Caradoc (40), October 7, 1892, Bailey (N.R.).—R. OMISSA, var. TYPICA.

R. mollis. Caer Caradoc (40) (hedge on south side), October 8, 1892, Bailey (1893).—R. OMISSA, var. SHERARDI. I refer to the specimen labelled as indicated only. I have not seen the others mentioned in the *Report*, except the above.

R. mollis. Strathpeffer (106), July 28, 1890, Bailey [No. 6 or 228]. —R. OMISSA, var. SUBERECTA, a weak form.

R. mollis. Harton Road (40), October 3, 1904, Painter.—R. TOMENTOSA, f. EGLANDULOSA.

R. mollis.? Ayton Moor (62), August 12, 1911, Hodge.—Between f. GLANDULOSA and var. PSEUDO-RUBIGINOSA.

R. mollis var. Jamestown (106), July 29, 1890, Bailey [No. 10 or 229].—R. OMISSA, var. SUBERECTA.

R. mollis, var. *caerulea.* Cefn Hill (36), September 9, 1907, Ley.—Correct.

R. mollis, var. *caerulea.* Cerrig Haffes (42), July and August 1906, Ley.—Correct.

R. mollis, var. *glabrata.* Duncraig (105), August 1893, Fox.—R. GLAUCA, var. SUBCRISTATA.

R. mollis, var. *glabrata.* Strome Ferry (105), August 3, 1888, E. F. Linton.—R. OMISSA, var. SUBERECTA, f. GLABRATA.

R. mollis, var. *Grenierii.* Dyffryn Crawnon (42), July and September 1908, Ley.—Var. TYPICA.

R. mollis, var. *pseudo-rubiginosa.* Strome Ferry (105), September 1893, Fox.—R. OMISSA, var. WOODSIANA, but untypical.

R. mollis, var. *recondita.* Mellte Glen (42), August 19, 1908, Ley. —R. OMISSA, var. SUBMOLLIS, but a mixture was distributed.

R. mollis × *pimpinellifolia.* Chee Dale (57), August 24, 1896, W. R. Linton.— × R. SABINI.

R. mollis × *spinosissima.* Pooley Bridge (70), August 7, 1912. W.-Dod.— × R. SABINI.

R. mollissima f. Between Burntisland and Aberdour (85), September 20, 1876, Webb.—R. MOLLIS, f. GLANDULOSA.

R. mollissima, var. *caerulea.* Currie (83), August 24, 1876, Webb. —Correct.

R. omissa. Aberpergwm (41), June and August 1911, Riddelsdell. —R. MOLLIS, f. GLANDULOSA.

R. omissa. Chilsbury (7), September 1922, Hurst.—Correct.

R. omissa. Hordesley, road to Marshbrook (40), July and September 1909, Ley.—Var. TYPICA f. with long peduncles. My specimen is labelled from "near Marshbrook" [Ref. No. 5], but has no B.E.C. stamp.

R. omissa. Portneathvaughan (41), June 28, 1911, Riddelsdell.—f. SUBMOLLIS.

R. omissa f. Longville (40), July and September 1909, Ley.—Var. SHERARDI or possibly f. SUBMOLLIS.

R. omissa, var. *resinosoides.* Sutton Walls (36), September 14, 1909, Ley.—Var. TYPICA, but towards f. SUBMOLLIS.

R. omissa, var. *resinosoides.* Glen Peebles (78), September 1918, Druce.—Correct.

R. omissa, var. *submollis.* Presthope (40), July and September 1909, Ley.—Var. SHERARDI.

R. omissa, var. *submollis.* New Radnor (43), September 10, 1908, Ley.—Var SHERARDI. My specimen is labelled "*Rosa*" only. It is from the B.E.C., but another specimen, not bearing the B.E.C. stamp, but from same place and date, is labelled "*R. submollis.*"

R. omissa, var. *submollis.* Gorsley (36), September 4, 1907, Ley.—R. TOMENTOSA, f. EGLANDULOSA.

R. permixta. Halling (16), August 19, 1894, W.-Dod.—R. MICRANTHA, var. TRICHOCARPA, a narrow-fruited form.

R. pimpinellifolia × *tomentosa* (*involuta*). Clonbur (1), June 11, 1896, Marshall.—× R. SABINI.

R. platyphylla. Biddulph (39), September 1885, Painter (1885?). —R. DUMETORUM, var. TYPICA, f. SEMIGLABRA.

R. pomifera. St Margarets (15), June 1919, Druce.—Correct.

R. pomifera. Deal (15), July 1903, Druce.—Correct.

R. pomifera. Kingsdown (15), September 1919, Fox.—Correct.

R. pomifera. Tidenham Chase (34), July 2, 1902, Shoolbred.—Correct. Not *R. recondita* as stated in *Rept.* 1917, p. 222.

R. pomifera. Daren y Cwm (42), September 17, 1907, Riddelsdell (1911).—R. MOLLIS, var. TYPICA.

R. pomifera. Taren yr Esgob (42), July 20, 1909, Ley.—R. MOLLIS, var. TYPICA.

R. pseudo-cuspidata. Tutshill (34), September 28, 1911, Riddelsdell.—R. OMISSA, var. TYPICA, but fruit untypical.

R. pseudo-cuspidata. Horsley (17), September 5, 1915, Britton.—R. TOMENTOSA, var. BRITTONI, off type in fruit.

R. pseudo-rusticana. Hagler's Hole (8), September 1, 1888, Rogers. —Correct.

R. ramealis. Wadenhoe (32), July 1910, Ley.—f. JACTATA, off type.

R. Reuteri. Oyce of Firth (111), August 21, 1880, Johnston.—Correct.

R. rhynchocarpa. Crickhowell (42), August 23, 1909, Ley.—Correct.

R. Robertsoni. Ham Common (17), June and July 1894, W.-Dod.—Correct.

R. Rothschildii. Malden (17), 1911, Britton (1913).—Correct.

R. rubella. Mynde Park (36), July 2, 1888, Ley (1888?).—R. ALPINA × SPINOSISSIMA, not *R. rubella* Sm.

R. rubelliflora. Malden (17), June 13, 1911, Britton.—R. CANINA. var. DUMALIS, but may be f. RUBELLIFLORA.

R. rubiginosa. Near Forres (95), August 4, 1898, Marshall.—Var. APRICORUM with large leaflets.

R. rubiginosa var. Boxley Warren (15), July 31, 1894, Marshall [No. 1238].—Var. APRICORUM.

R. rubiginosa var. Boxley Warren (15), July 31, 1894, Marshall [No. 1236].—Var. JENENSIS.

R. rubiginosa var. Linton (36), September 16, 1891, Ley.—R. MICRANTHA, var. TRICHOCARPA, a narrow-fruited form.

R. rubiginosa × ? Kidnal (58), July 30, 1906, W.-Dod.— × R. TOMENTELLIFORMIS.

R. rubiginosa, var. *apricorum.* Box Hill (17), September 11, 1880, Groves.—Correct.

R. rubiginosa, var. *comosa.* Sprouston (27), September 1886, E. F. Linton.—Correct. My specimen is dated September 2. 1887, but I think it is the same.

R. rubiginosa, var. *comosa.* Littlesea (9), August 27, 1889, E. F. Linton (N.R.).—Correct.

R. rubiginosa, var. *echinocarpa.* Drayton (27), September 17. 1884, E. F. Linton.—Correct.

R. rubiginosa, var. *echinocarpa.* Sprowston (27), July 2, 1884, E. F. Linton.—Nearest this but with very different fruit and probably a new variety. Also sent to B.E.C. in 1883 and 1885 but not in the *Reports.*

R. Sabini. Straidkilly (1), August 18, 1910, Waddell.—Correct.

R. scabriuscula. Coldsborough Park (36), September 25, 1888, Ley —R. OMISSA, var. WOODSIANA, *R. scabriuscula.* Burwardesley (58), July 15, 1900, W.-Dod.—Correct.

R. scabriuscula. Whittlebury Forest (32), July 1922, Druce.—Var. SYLVESTRIS but untypical.

R. scabriuscula or *sylvestris.* Marshbrook (40), July and September 1909, Ley.—Var. SYLVESTRIS towards SCABRIUSCULA. My specimen bears the Ref. No. 16 but no B.E.C. stamp.

R. sepium. Buckden (31), September 5, 1884, W. R. Linton.—R. ELLIPTICA, var. BILLIETII.

R. sepium. Beckley (23), September 5, 1887, Rogers.—Var. ARVATICA with small leaflets. Probably restricted var. SUBCUNEATA Rouy, which I make synonymous.

R. sphaerica. Chetnole (9), July 1881 and October 1879, Rogers (1881).—Var. SENTICOSA, f. AMANSII.

R. sphaeroidea. Stow Wood (23), July 1923, Druce.—Var. VERTICILLACANTHA, f. LEMAITREI.

R. spinosissima, var. *rubella.* St Ouen's (C), June 1923, Druce.—f. ROSEA, not *rubella.*

R. spinosissima, with yellow petals. Selkirk (79), August 1919, Druce (1920) —Probably R. LUTEA Mill.

R. spinosissima × *dumetorum*, f. *Margerisoni.* Kettlewell (65), no date, Druce (1911).—Correct.

R. spinosissima × *mollis.* Chee Dale (57), July 5, 1898, E. F. Linton.— × R. SABINI.

R. stylosa. Killpale (35), June 23, 1910, Shoolbred.—Var. SYSTYLA.

R. stylosa var. Tutshill (34), September 27, 1911, Riddelsdell.—Var. VIRGINEA.

R. stylosa, var. *evanida.* Ham Common (17), August 19, 1910, W.-Dod.—R. CANINA, var. POUZINI, f. SIMPLICIDENS.

R. stylosa, var. *leucochroa.* Bigbury (3), July 7, 1894, Marshall.—R. DUMETORUM, var. INCERTA, f. LAEVISTYLA.

R. subcristata. Lancaut (34), October 6, 1911, Riddelsdell.—R. CANINA, var. VIRIDICATA, off type.

R. subcristata. Burntisland (85), August 1, 1876, Webb.—Correct.

R. subcristata. Oyce of Firth (111), August 1880, Boswell (N.R.).—Correct.

R. subcristata. Headley (17), September 17, 1916, Britton.—Correct.

R. subcristata. Gisburn (64), September 23, 1889, Bailey.—f. MYRIODONTA.

R. suberecta. Hartsop (69), July 6, 1910, Ley.—Correct, but off type near SUBMOLLIS.

R. suberecta. (1) Kylesku (108), July 20, 1918; (2) Inchnadamph (108), July 25, 1908, Marshall (1909).—Both correct.

R. systyla. Dineham (35), June 23, 1910, Ley.—Correct.

R. systyla. Ham Common (17), July 7, 1894, W.-Dod.—Var. LANCEOLATA.

R. tomentella. Horsepath (23), July 1923, Druce.—f. CARIONII. My specimen is labelled R. OBTUSIFOLIA, var. CARIONII.

R. tomentella. Bridgerule East (4), August 3, 1882, Rogers (1883). —Var. OBTUSIFOLIA.

R. tomentella, f. *Nicholsoni.* Ripon (64), October 6, 1879, T. Nicholson.—Correct. This must not be confounded with G. Nicholson's specimen of var. SCLEROPHYLLA from the same station which was labelled *R. affinis* by Christ.

R. tomentosa. (a) St Ippollitts (20), June 18, 1911; (b) Royston (20), June 15, 1911, Little.—Probably both var. TYPICA.

R. tomentosa. Saintfield (1), July 20, 1911, Waddell.—Var. TYPICA.

R. tomentosa. Marden Park (17), September 6, 1914, Britton.—f. EGLANDULOSA.

R. tomentosa. Newport (3), June 6, 1922, D'Urban.—f. EGLANDULOSA.

R. tomentosa. Thames Ditton (17), September 1, 1877, Groves (1906).—Var. PSEUDO-CUSPIDATA towards var. FOETIDA.

R. tomentosa. Bourne (53), August 24, 1921, Webster.—Var. SYLVESTRIS.

R. tomentosa var. Shirley (57), Sept. 12, 1888, W. R. Linton (1888?).—R. CORIIFOLIA, var. BAKERI, f. LINTONI.

R. tomentosa var. Hawthornden (83), August 8, 1876, Webb.—R. CORIIFOLIA, var. PRUINOSA.

R. tomentosa var. Allt-Goch (43), July 11, 1889, Ley.—R. MOLLIS, var. TYPICA.

R. tomentosa var. Aysgarth (65), June 1896, Wheldon (1897).—R. MOLLIS, var. TYPICA.

R. tomentosa var. Ham Common (17), July 8, 1905, W.-Dod.—R. OMISSA, f. RESINOSOIDES.

R. tomentosa var. Dalmally (98), August 10, 1893, Marshall (N.R.). —R. OMISSA, f. SUBMOLLIS. On another label, bearing the same reference number [972], Marshall calls this *R. mollis* var.

R. tomentosa var. Ashbourne (57), July 13, 1887, W. R. Linton (1888).—Var. TYPICA, towards R. FARINOSA.

R. tomentosa var. Burntisland (85), September 2, 1876, Webb.—Var. PSEUDO-CUSPIDATA.

R. tomentosa var. Ingarsby (55), September 1907, Horwood.—Var. DUMOSA but resembling some CORIIFOLIAN form.

R. tomentosa f. Saintfield (1), July 29, 1911, Waddell.—R. GLAUCA, var. STEPHANOCARPA.

R. tomentosa f. Ape's Tor (39), September 1889, Purchas.—My specimen of this date and place, labelled *R. tomentosa*, var. *subglobosa* Ref. No. 2 but with no B.E.C. stamp, is R. OMISSA, var. TYPICA.

R. tomentosa f. Saintfield (1), August 13, 1909, Waddell (1911).—f. EGLANDULOSA.

R. tomentosa agg. Kingston (23), July 1923, Druce.—Var. BRITTONI.

R. tomentosa × *canina*. Gallantry Bank (58), August 15. 1902. W.-Dod.—R. TOMENTELLA, var. DECIPIENS.

R. tomentosa, var. *cuspidatoides*. Loch Carron and Loch Reraig (105 or 106), August 1893, Fox.—Both R. OMISSA, var. SUBERECTA.

R. tomentosa, var. *farinosa*. Westhope Hill (36), July 2, 1888, Ley.—Var. TYPICA, f. EGLANDULOSA.

R. tomentosa, gr. *omissa*. Auchterarder (88), September 5 1918. Barclay.—R. OMISSA, var. TYPICA, towards var. WOODSIANA.

R. tomentosa, var. *pseudo-cuspidata*. Chinnor (24), July 1923. Druce.—Var. TYPICA. The label reads *R. tomentosa* agg.

R. tomentosa, var. *pseudo-mollis*. Boar's Hill (22), June 1893, Druce (1894).—Correct.

R. tomentosa, var. *Sherardi*, f. *leiostyla*. Twinstead (19). September 1922, Druce.—Var. TYPICA, f. EGLANDULOSA.

R. tomentosa, var. *subglobosa*. Between Borgue and Girthon Kirk (73), September 18, 1889, Bailey.—R. MOLLIS, f. CAERULEA.

R. tomentosa, var. *subglobosa*. Church Stretton (40), July 1897 Purchas.—R. OMISSA, var. SHERARDI.

R. tomentosa, var. *subglobosa*. Glanyrn (43), August 1894, Steuart (N.R.).—R. OMISSA, f. SUBMOLLIS.

R. tomentosa, var. *sylvestris*. Strath Ascaig (105 or 106), September 1893, Fox (N.R. or 1893).—R. OMISSA TYPICA, a long-peduncled form.

R. tomentosa. var. *sylvestris*. Menai (49), July 25, 1871, Harbord Lewis (N.R.).—R. TOMENTOSA, var. nova.

R. tomentosa, var. *sylvestris*. Thornbury (36), August 16, 1901, Ley.—Var. PSEUDO-CUSPIDATA towards gr. SCABRIUSCULAE.

R. tomentosa, var. *uncinata*. Llys y Gwynt (49), September 25, 1884, Bailey (1887).—Correct.

R. tomentosa, var. *uncinata*. Llys y Gwynt (49), July 31, 1906, W.-Dod.—Correct.

R. uncinata. Marshbrook (40), July and September 1909, Ley.—Var. SHERARDI.

R. uncinata. Cerrig Haffes (42), July 13, 1906, Ley (N.R.).—R. TOMENTOSA, f. EGLANDULOSA.

R. verticillacantha. Bradley Valley (58), July 22, 1905, W.-Dod.—Var. VINACEA.

R. verticillacantha var. Littlehope (36), August 19, 1891, Ley.—Var. ASPERNATA, f. GLOBOSA.

R. verticillacantha, var. *aspernata*. Pinley Green (38), July and August 1889, Bagnall.—Var. VERTICILLACANTHA.

R. Wilsoni. Menai Straits (49), June and July 1886, Cosmo Melvill (1911).—Correct.

R. Wilsoni. Menai Straits (49), September 1875 and July 1877, Fisher (N.R.).—Correct.

R. Wilsoni. Menai Straits, September 7, 1888, Bailey (1914).—Correct.

R. vinacea. Cliffbank (58), August 26, 1906, W.-Dod.—Correct.

R. virginea. Horsebridge (11), August 1876, Groves.—Var GARROUTEI.

R. virginea. Tutshill (34), October 1911. Riddelsdell.—Var. GARROUTEI.

R. Watsoni. Kelso (80), July 1876 and Roxburgh Castle (80), September 1876, Brotherston.—Var. PRUINOSA.

R. —— [Ref. No. 9]. Toome (1), August 18, 1909, Waddell (1911).—R. CANINA, var. BISERRATA.

R. —— Near Wadenhoe (32), August 1910, Ley.—R. DUMETORUM, var. INCERTA. The label of my specimen bears the L.C. No. 588.

R. —— [Ref. No. 2029]. Dovedale (57), August 22, 1913, W.-Dod. —R. DUMETORUM, var. MERCICA.

R. —— [Ref. No. 252]. Atlow (57), July 4 and August 22, 1890, W. R. Linton.—R. CORIIFOLIA, var. SUBHISPIDA.

R. —— Bradley (57), September 20, 1888, W. R. Linton (Label marked "goes under *Watsoni* it seems to me. J. G. B.").—R. CORIIFOLIA, var. BAKERI, f. LINTONI.

R. —— [Ref. No. 253]. Bradley (57), August 23, 1890, W. R. Linton.—R. CORIIFOLIA, var. BAKERI, f. SETIGERA.

R. —— [Ref No. 697 A]. Garve (106), July 23, 1909, Shoolbred.—R. CORIIFOLIA, var. OBOVATA. My own specimen is Marshall's No. 3364, which is the same Rose.

R. —— [Ref No. 221]. Wraysbury (22), July 1882, Nicholson.—R. TOMENTELLA, var. ROTHSCHILDII.

R. —— [Ref. No. 205]. Wimbledon (17), August 12, 1882, Nicholson. [Ref. No. 2], Wimbledon (17), September 4, 1881, Nicholson (1882).—Both R. TOMENTELLA, var. ROTHSCHILDII. I have two specimens of No. 2, both bearing the B.E.C. stamp, one dated September 6, 1879, the other July 1881, but all are the same variety.

R. —— [Ref. No. 786]. By the Beverley Brook, Combe (17), July 25, 1912, Britton.—R. TOMENTELLA, var. ROTHSCHILDII.

R. —— [Ref. No. 836]. Open ground, Malden (17), August 19, 1912, Britton.—R. TOMENTELLA, var. ROTHSCHILDII.

R. —— Craig Cille (42), July 3, 1908, Ley.—R. MOLLIS, var. TYPICA. My specimen is labelled R. POMIFERA [Ref. No. 3], August 23, 1909, but Ley told me it was the same.

R. —— Mountain pasture near Combe Scar (65), July and September 1919, Wilson.—R. MOLLIS, f. near CAERULEA.

R. —— [Ref. No. 1]. Bellair Hill (1), August 9, 1910, Waddell.—R. OMISSA, var. RESINOSOIDES.

R. —— Northants and Hunts (31 and 32), August 1910, Ley.—R. OMISSA, var. SHERARDI. I refer to my own specimen labelled "near Buckden, Hunts, August 11, 1910." I cannot speak for the others.

R. —— Braunstone (55), September 1908, Bell.—R. OMISSA, var. PSEUDO-MOLLIS.

R. —— [Ref. No. 682 A]. Garve (106), July 23, 1909, also [Ref. Nos. 680 A and 681 A] Kyle of Loch Alsh (105), July 21, 1909, Shoolbred.—R. OMISSA, var. SUBERECTA, most probably. Marshall and Shoolbred made many gatherings together of this variety and its f. GLABRATA in E. and W. Ross. My own specimens are Marshall's Nos. 3355, 3362, 3363 and 3365, and are certainly var. SUBERECTA, but I cannot be sure that all Shoolbred's are the same. Some may be f. GLABRATA or even × R. SHOOLBREDI.

R. —— Linton Ridge (36), September 1907 and June 27, 1908, Ley (1911).—R. TOMENTOSA, f. EGLANDULOSA with very untypical fruit.

R. —— Mardale (69), July 1 and September 1910, Ley.—R. TOMENTOSA, f. EGLANDULOSA.

R. —— Cowleigh Park (36), August 23, 1910, Ley.—R. TOMENTOSA, var. CONFUSA.

R. —— [Ref. No. R. 7139]. Noke (23), August 1918, Druce.—R. TOMENTOSA, var. SCABRIUSCULA.

DUPLICATED BINOMIALS.

G. CLARIDGE DRUCE, D.Sc., LL.D.

Among the resolutions passed at the Imperial Botanical Congress in 1924 was one which suggests the revoking of the Article 55 by which such names as *Linaria Linaria* were rejected as invalid—*i.e.*, *Linaria vulgaris* Mill was chosen rather than *L. Linaria* (L.) Karst. The latter name it is now suggested should be valid. Article 55 was not carried at the Vienna Congress without opposition — one of the arguments [sic] which appeared to have weight was that duplicated names excited the risibility of Engler's students, whose mirthful tendencies did not appear to be awakened by such names as *Sagina saginoides* or *Cerastium cerastoides*. Though tardily, British botanists now appear to be willing to adopt the use of duplicated names, which has the advantage of doing away with the reproach that while in the Zoological side of the British Museum such names had long been in use yet in the Botanical Department of the same Institution they were barred. The suggested plan, therefore, tends towards a unity of method among biological students, and it also avoids competing trivials, *e.g.*, the Swine's Cress which has been named *Coronopus Ruellii*, *C. procumbens*, *C. verrucarius*, *C. squamatus*, etc., whereas *C. Coronopus* has, and could have, no rival. We welcome the change. It was the plan which I at first followed in my MS. for the *Flora of Berkshire* but which, under pressure, I unfortunately did not publish.

Schinz and Thellung have published a list of Duplicated Binomials in Mitt. aus d. Bot. Mus. der Univ. Zurich 172, 1924, but in Karst. Pharm. Med. Bot. many of these combinations had been already given.

The following species, with their varieties, which have been found in Britain, have such duplicated names. These will be adopted in the forthcoming edition of the *British Plant List*.

GLAUCIUM GLAUCIUM (L.) Karst., *l.c.* (Chelidonium Glaucium L.), vice G. flavum Cr.

BARBAREA BARBAREA (L.) M'Mill. (Erysimum Barbarea L.), vice B. lyrata Asch. et B. vulgaris Ait.
Var. b. campestris (Fries) Dr.
Var. c. silvestris (Fries).
Var. d. transiens (Dr.).
Var. e. decipiens (Dr.)
Var. f. arcuata (Reichb.) Dr.
Var. g. brachycarpa (Jacks.).

NASTURTIUM NASTURTIUM (L.) (Sisymbrium Nasturtium-aq. L.), vice N. officinalis.
Var. b. siifolium (Reichb.).
Var. c. latifolium (Bouv.).
Var. d. microphyllum (Crantz).
We, however, use the older generic name RADICULA NASTURTIUM (L.) Dr.

ERUCA ERUCA (L.) S. & T. (Brassica Eruca L.), vice E. sativa Crantz.
Var. b. lilacina Dr.

CAKILE CAKILE (L.) Karst. (Bunias Cakile L.), vice C. maritima Scop.

Var. sinuatifolia (DC.) comb. nov.

CORONOPUS CORONOPUS (L.) Karst. (Cochlearia Coronopus L.), vice C. squamata; C. Ruellii; C. verrucarius; C. procumbens, etc.

RADIOLA RADIOLA (L.) Karst. (Linum Radiola L.), vice R. Millegrana; R. Linoides, etc.

LABURNUM LABURNUM (L.) Karst. (Cytisus Laburnum L.), vice L. vulgare et L. anagyroides.

ONOBRYCHIS ONOBRYCHIS (L.) Karst., vice O. viciifolia et O. sativa.

LENS LENS (L.) Karst. (Ervum Lens L.), vice Lens culinare et L. esculenta.

COTONEASTER COTONEASTER (L.) Karst. (Mespilus Cotoneaster L.), vice C. vulgaris; C. integerrima, etc.

CYDONIA CYDONIA (L.) Karst. (Pyrus Cydonia L.), vice Cydonia vulgaris.

ANTHRISCUS ANTHRISCUS (L.) Karst. (Scandix Anthriscus L.), vice A. Scandix, A. vulgaris, etc.

FOENICULUM FOENICULUM (L.) Karst. (Anethum Foeniculum L.), vice F. vulgare et F. officinalis.

SILAUS SILAUS (L.) Karst. (Peucedanum Silaus L.), vice S. flavescens; S. pratense, etc.

MEUM MEUM (L.) Karst. (Athamanta Meum L.), vice M. Athamanticum Jacq.

LEVISTICUM LEVISTICUM (L.) Karst. (Ligusticum Levisticum L.), vice L. officinale et paludapifolium.

ARCHANGELICA ARCHANGELICA (L.) Karst. (Angelica Archangelica L.), vice A. officinarum Hoffm.

DIERVILLA DIERVILLA (L.) S. & T. (Lonicera Diervilla L.), vice D. trifida.

PULICARIA PULICARIA (L.) Karst. (Inula Pulicaria L.), vice Pulicaria prostrata et P. vulgaris.

PETASITES PETASITES (L.) Karst. (Tussilago Petasites L.), vice P. ovatus; P. vulgaris; P. hybrida et P. officinalis.

Var. b. hybrida (L.).

MARIANA MARIANA (L.) Hill (Carduus Mariana L.), vice M. lactea et Silybum Marianum.

GALACTITES GALACTITES (L.) S. & T. (Centaurea Galactites L.), vice G. tomentosa Mönch.

CRUPINA CRUPINA (L.) Karst. (Centaurea Crupina L.), vice C. vulgaris Pers.

RHAGADIOLUS RHAGADIOLUS (L.) Dorfler (Lapsana Rhagadiolus L.), vice R. edulis.

TARAXACUM TARAXACUM (L.) Karst. (Leontodon Taraxacum L.), vice T. vulgare; T. Dens-Leonis; T. officinale, etc.

And the following varieties, tanylepis (Dahlst.); valdedentatum (Dahlst.); naeviferum (Dahlst.); subundulatum (Dahlst.); latispina (Dahlst.); decipiens (Raunk.); proximum (Dahlst.); Arrhenii (Palmg.); simile (Raunk.); chloroleucum (Dahlst.); Gelertii (Raunk.); copidophyllum (Dahlst.); polyodon (Dahlst.); longisquameum (Lindb. f.); bracteatum (Dahlst.); lingulatum (Dahlst.); unguilobum (Dahlst.); tenebricans (Dahlst.); dissimile (Dahlst.); expallidum (Dahlst.); Kjellmani (Dahlst.); sublaciniosum (Dahst.); angustisquameum (Dahlst.); intricatum (Lindb. f.); hamatum (Raunk.); laeticolor (Dahlst.); crociiflorum (Dahlst.); dilatatum (Lindb. f.); alatum (Lindb. f.); fasciatum (Dahlst.); duplidens (Lindb. f.); Dahlstedtii (Lindb. f.); erythrospermum (Andr.); laevigatum (DC.); laetum (Dahlst.); oxoniense (Dahlst.); fullviforme (Dahlst.); fulvum (Raunk.); brachyglossum (Dahlst.) et laciniatum (Dahlst.).

OXYCOCCUS OXYCOCCUS (L.) M'Mill. (Vaccinium Oxycoccus L.), vice O. palustris Pers. et O. quadripetalus Gil.

Var. b. microcarpus (Rupr.).

Var. c. pyriformis (Dr.).

HYPOPITYS HYPOPITYS (L.) Small (Monotropa Hypopitys L.), vice H. Monotropa Cr.; H. multiflora Scop.

Var. b. glabra (Roth) comb. nov.

LIMONIUM LIMONIUM (L.) Dr. (Statice Limonium L.), vice L. vulgare Mill.

Var b. pyramidale (Dr.).

× humile = Neumanni (C. E. Salm.).

CENTAURIUM CENTAURIUM (L.) (Gentiana Centaurium L.), vice C. umbellatum Pers.

Var. b. capitatum (Koch).

Var. c ellipticum (Dr.).

Nymphoides Nymphoides (L.) comb nov. (Menyanthes Nymphoides L., N. nymphaeoides Britton), vice N. peltatum; N. orbiculata, etc.

Omphalodes Omphalodes (L.) comb. nov. (Cynoglossum Omphaloides L.), vice O. verna Mönch.

Lappula Lappula (L.) comb. nov. (Myosotis Lappula L.), vice L. echinata Gilib.

Lycopersicon Lycopersicon (L.) Karst. (Solanum Lycopersicon L.) =Lycopersicum Lycopersicum S. & T., vice L. esculentum Hill.

Linaria Linaria (L.) Karst. (Antirrhinum Linaria L.), vice L. vulgaris Mill.
Var. b. latifolia (Bab.).
Var. c. prostrata (Domin).
Var. d. pulchella (Dr.).
Var. e. peloria.
× repens=L. sepium (Allm.).

Anarrhinum Anarrhinum (L.) comb. nov. (Antirrhinum Anarrhinum L.), vice A. bellidifolium Desf.

Odontites Odontites (L.), Wettst. (Euphrasia Odontites L.), vice O. serotina, etc.
Var. b. verna (Reichb.); c. longifolia (Corb.); d. litoralis (Reichb.); e. serotina (Bert.); f. divergens (Balb.); g. rotundata (Ball.).

Calamintha Calamintha (L.) comb. nov. (Melissa Calamintha L.), (but C. Calamintha Karst. is used in the sense of C. officinalis), vice C. silvatica Bromf.

Fagopyrum Fagopyrum (L.) Karst. (Polygonum Fagopyrum L.), vice F. sagittatum Gil.=F. esculentum Mönch.

Alnus Alnus (L.) (Betula Alnus L.), vice A. glutinosa Gaertn. et A. rotundifolia Mill.
Var. laciniata (Ehrh.).
Var. macrocarpa (Loud.).
Var. microcarpa (Uechtr.).
× incana=A. hybrida (A. Br.).

Castanea Castanea (L.) Karst. (Fagus Castanea L.), vice C. sativa Mill; C. vesca Gaertn. et C. vulgaris Lam.

Corallorrhiza Corallorrhiza (L.) M‘Mill. (Orphrys Corallorrhiza L.), vice C. trifida et C. innata Ait.

EPIPOGON EPIPOGIUM (L.) Druce (Satyrium Epipogium L.) = Epipogon Epipogon Kerner, vice E. aphyllum Sw. et E. Epipogon Huth.

HELLEBORINE HELLEBORINE (L.) (Serapias Helleborine L.), vice H. latifolia Dr.
Var. b. viridiflora (Lint.).
Var. c. angustifolia (Dr.).
× atropurpurea = H. Crowtheri (Dr.).

POLYGONATUM POLYGONATUM (L.) Jiras. (Convallaria Polygonatum L.), vice P. odoratum (Mill.) Dr.; P. officinale All., etc.
Var. b. intermedium (Syme) comb. nov.

DAMASONIUM DAMASONIUM (L.) Druce in Fl. Berks, 1897 (Alisma Damasonium L.), vice D. Alisma Mill; D. stellatum, etc.

SORGHUM SORGHUM (L.) (Andropogon Sorghum L.), vice S. saccharatum Mönch et S. vulgare.

CALAMAGROSTIS CALAMAGROSTIS (L.) Karst. (Arundo Calamagrostis L.), vice C. lanceolata et C. canescens.

PHRAGMITES PHRAGMITES (L.) Karst. (Arundo Phragmites L.), vice P. vulgaris et P. communis.
Var. b. subuniflora (DC.); c. stolonifera (Meyer); d. pseudodonax (Rabh.); e. flavescens (Custer); f. tenella (Nolte); g. coarctata (Raunk.) (densior Dr.); h. effusa (A. & G.).

ERAGROSTIS ERAGROSTIS (L.) Karst. (Poa Eragrostis L. et Briza Eragrostis L.), vice E. minor Host. et E. poaeoides Beam.

LARIX LARIX (L.) Kern. & Wetts. (Pinus Larix L.), vice L. decidua Mill et L. europea DC.

ABIES ABIES (L.) (Pinus Abies L.), vice Abies excelsa DC.

PHEGOPTERIS PHEGOPTERIS (L.) Underw. (Polypodium Phegopteris L.), vice P. polypodioides Fée.

CETERACH CETERACH (L.) Karst. (Asplenium Ceterach L.), vice C. officinarum L. & DC.
Var. b. crenatum (Milde).

ARCTIUM VULGARE (HILL) EVANS.

A. H. EVANS, M.A., D.Sc.

Dr Druce has asked me to restate very shortly the most important of the conclusions arrived at in my articles on the genus *Arctium* (*Journ. Bot.* 51, p. 113; 53, p. 145) and the results of another twelve years' work on the group.

1. *Arctium Lappa*, with its solid petiole, large heads and distinct habit of growth, is quite unmistakable; *A. minus*, with its heads contracted in fruit, and its tall branched growth is equally so.

2. The only other British species is intermediate in the size of the heads, which may either be stalked or almost sessile. The two forms or sub-varieties are quite inconstant. I have twice kept under observation a large colony of plants, which one year came up with long-stalked heads, another year with "sessile." In most years they were shortly stalked. Smaller patches gave similar results, which were due to climatic influences—wet seasons causing long stalks. Similarly we find in our damper British counties to the westward nothing but the fine large reddish form with very long stalked heads (typical *intermedium* Lange), in our drier counties to the eastward nothing but the short-stalked form (typical *nemorosum* auct ang.) except in wet seasons. In 1924 every specimen I have seen has had stalks to the head, some quite long.

3. *A. Lappa* and *A. minus* are seldom very arachnoid; but a neat low-growing form has the heads entirely covered with white "wool." This is the plant named by Babington *A. pubens;* but he soon recognised the fallacy of separating a form on one variable characteristic and reverted to *intermedium*.

4. We have twice had a type specimen of Lejeune's "*nemorosum*" in England on loan. It is a portion of a branch only and is in any case too doubtful to give a name to. It might easily be a heavily pruned specimen of *minus*, but I prefer to consider that it belongs to the larger plant.

5. Fortunately there is no doubt that there is an earlier name (*vulgaris*) given by Hill, "Vegetable Kingdom," vol. iv. (1762), p. 28, pl. 25, fig. 1. Fig. 2 on the same plate does not concern us, but is probably meant for either *Lappa* or "*pubens*." Fig. 3 is *minus*, or as Hill calls it, *minor*. Fig. 1 is the plant which in its

various forms has been called *intermedium* and *nemorosum*. The figure is very fair, according to eighteenth century standards, and the description very accurate. But, of course, it must be remembered that Hill's plant would doubtless be the easterly form, with short-stalked heads. This is, in most cases, perfectly green and hardly ever red, when growing on dry road-sides, near Cambridge, London, etc., etc. The plant of damper situations and climates is equally certain to be reddish, but as I have said (under par. No. 2) it cannot be kept apart as a species but only as a climatic form.

6. *Arctium vulgare*, *A. Lappa*, and *A. minus* vary in the colour of the flowers from palest pink to crimson, *A. Lappa* being usually pale.

7. I have for a second time found the hybrid *A. Lappa* × *vulgare* with both parents, at Wicken Fen.

Mrs DELANY AND BUCKS PLANTS.

G. Claridge Druce, D.Sc., LL.D.

Mrs Delany, daughter of Robert Granville, brother of Lord Lansdowne, was born at Coulton, Wilts, May 14, 1700, and married in 1717-8 to Alex. Pendarves, "a fat, snuffy and sulky old man" of 60, who died in 1724. In 1743 she married the Rev. Patrick Delany, afterwards Dean of Down, who died in 1774. This second marriage led to some family estrangement. In 1774 she began a "herbal" by cutting out with fine scissors portions of coloured paper which were afterwards gummed on to a paper—usually with a black surface—and this was so artistically done as to give a truthful and not inartistic representation of the plant. She received the praise of Erasmus Darwin in his "Love of the Plant." Many of them were prepared at the residence of her friend, the Duchess of Portland, at her mansion at Bulstrode in Buckinghamshire. The Duchess, herself an accomplished and ardent botanist, had for her domestic chaplain the Rev. Dr Lightfoot, the author of the *Flora Scotica*. The Duchess had a very large collection of living plants at Bulstrode, including *Danaa cornubiensis*, which had been sent her by the Bishop of Carlisle, Dr Goodenough, and some, such as *Lysimachia thyrsiflora*, still linger there. These figures thus prepared by Mrs Delany at Bulstrode might rank as the first evidence of their occurrence in the county, as they were executed from 1773-83 only it is difficult to say which were garden and which native species. Such plants as *Gentiana Amarella* and *Euphrasia officinalis* (*nemorosa*) are almost certainly from a wild station. Altogether she prepared ten volumes with about 100 plants in each, and these have been presented to the nation by Lady Llanore, and are now in the Print Room at the British Museum. One may add that Mrs Delany's eyesight failed her in 1784, that she died on April 15, 1788, and was buried at St James', Westminster. Her last years were rendered comfortable by King George the Third granting her a house at Windsor, and a pension of £300 per annum. She was on intimate terms of friendship with the Royal Family. Her picture by Opie, now at Hampton Court, was painted to the King's order. The following plant-figures by Mrs Delany were prepared at Bulstrode between the years 1773-1783, and many of these are presumably of wild plants gathered in that neighbourhood in Buckinghamshire. They slightly precede in date the paintings of plants made by the Countess of Aylesford at Denham from 1780-90. *Clematis Vitalba* L., 1776; *Ranunculus repens* L.; *R. acris* L., 1781; *Berberis vulgaris* L., 1774; *Nymphaea lutea* L.; *Castalia* alba Wood, 1776; *Papaver Rhoeas* L., 1777; *Fumaria officinalis* L., 1779; *Erysimum cheiranthoides*, 1773; *Diplotaxis muralis* DC., 1779 (the plant was perhaps sent to her); *Bursa pastoris* Web., 1777 (beautifully done); *Silene Cucubalus*, 1780; *Helianthemum Chamaecistus* Mill., 1779; *Lychnis alba* Mill.; *L. Githago* Scop., 1779; *Stellaria Holostea* L., 1780; *Hypericum pulchrum* L., 1770; *H. perforatum* L.; *H. humifusum* L., 1780; *Malva moschata* L., 1776; *M. sylvestris* L., 1781; *Geranium pratense* L., 1778; *G. pyrenaicum* Burm. f., 1781; *G. lucidum* L., 1780; *G. Robertianum* L., 1779; *Oxalis Acetosella* L. and its var. *sub-purpurascens* DC., 1775; *O. corniculata* L., not native; *Ilex Aquifolium* L., 1775; *Ulex europaeus* L., 1776; *Trifolium pratense* L., 1782; *T. fragiferum* L., 1781; *Onobrychis Onobrychis* (L.), 1773; *Vicia Cracca* L., no date; *Lathyrus pratensis* L., 1782; *Spiraea Ulmaria* L. and *S. Filipendula* L., 1780; *Rubus caesius* L., 1777; *Fragaria vesca* L., 1777; *Potentilla procumbens* Sibth., 1782; *Rosa canina* L., 1777; *Crataegus monogyna* (labelled *Oxyacantha*), an excellent representation but undated; *Saxifraga granulata* L., 1775; *Sedum Telephium* L., 1781; *Lythrum Salicaria* L., 1779; *Epilobium hirsutum* L. (as *ramosum* Huds.), 1781, excellent; *Circaea lutetiana* L., 1779; *Bryonia dioica* Jacq., 1777; *Pimpinella Saxifraga* L., 1779; *Peucedanum palustre* Moench, 1775, this was also collected at Bulstrode by Lady M. Markham; *Viburnum Opulus* L., 1777; *Asperula odorata* L. and *A. cynanchica* L., 1779; *Sherardia arvensis* L.; *Scabiosa Succisa* L., 1781; *S. arvensis* L., 1782; *Solidago Virgaurea* L., 1778; *Bellis perennis* L., 1776; *Erigeron acris* L.; *Pulicaria dysenterica* Gaertn., 1781; *Achillea Millefolium* L., 1776 (this is var. *conspicua* Dr.); *Anthemis arvensis* L., 1779; *Chrysanthemum Leucanthemum* L., 1774; *Senecio Jacobaea* L., 1782; *Carduus nutans* L.; *Cirsium lanceolatum* Scop., 1776; *C. acaule* Weber, 1779; *Serratula tinctoria* L., 1782; *Centaurea Cyanus* L., 1779; *C. nigra* L., 1782; *Cichorium Intybus* L., 1776; *Hieracium Pilosella* L. 1781; *Leontodon hispidus* L., 1781; *L. autumnalis* L., 1780; *Sonchus asper* Hill, 1779; *Campanula Trachelium* L., 1780; *C. glomerata* L., 1779; *C. rotundifolia* L., 1776; *Lysimachia thyrsiflora* L., 1780 (this still grows by the ornamental water to which it was originally introduced by the Duchess of Portland); *L. vulgaris* L., 1778; *L. Nummularia* L., 1779; *Anagallis arvensis* L., 1776; *A. tenella* Murr., 1777 (perhaps introduced); *Ligustrum vulgare* L., 1780; *Vinca minor* L., 1782; *Blackstonia perfoliata* Huds., 1777; *Centaurium Centaurium* (L.) Dr., 1774; *Menyanthes trifoliata* L., 1775; *Symphytum officinale* L., 1780; *Barago officinalis* L., 1782; *Volvula sepium* Jung., 1776; *Solanum Dulcamara* L., 1775; *S. nigrum* L., 1780; *Atropa Belladonna* L., 1781; *Verbascum nigrum* L., 1776; *Linaria Linaria* (L.) Karst.; *L. repens* Mill., 1776, the Henley Toadflax; *L. spuria* Mill., 1779; *L. Cymbalaria* Mill., 1776; *Antirrhinum Orontium* L., 1781 (named wrongly); *Digitalis purpurea* L., 1776; *Veronica scutellata* L., 1779; *Euphrasia nemorosa* Mart., September 1778; *Lamium album* L., 1779; *Humulus Lupulus* L., 1781; *Hydrocharis Morsus-ranae* L., 1778; *Stratiotes Aloides* L., 1780, these two probably introduced; *Spiranthes spiralis* Rich., 1776; *Orchis Fuchsii* Druce, 1777, excellently done; *O. pyramidalis* L.; *O. militaris* L., 1780; *O. ustulata* L., 1779; *Aceras anthropophora* Ait., 1777; *Ophrys apifera* Huds., 1779; *O. muscifera* Huds., 1780; *Habenaria virescens* Druce, 1779 (as *bifolia*); *Iris Pseudacorus* L., 1777; *Tamus communis* L., 1777; *Ruscus aculeatus* L.,

1779; *Sparganium ramosum* Huds., no date; *Arum maculatum* L., 1782; *Sagittaria sagittifolia* L., 1777; *Butomus umbellatus* L., 1778. The collection is really an extraordinary exhibition of industry, the result of taste and patience. Some of the sheets are quite beautiful. Perhaps her greatest failure was in trying to represent the Fritillary. Others are quite realistic as, for example, the Willow-herbs where the four-cleft stigma is shown.

NOMENCLATORIAL NOTE.

Proposition by George Claridge Druce, M.A., D.Sc. (Oxon.), LL.D., to delete from the list of Nomina Conservanda the following generic names, which are inserted in defiance of the Rule of Priority, since earlier, well-defined and unexceptionable generic names are extant which have been used or revived by Botanists in important scientific works.

Therefore it is suggested to substitute the following names by others which comply with the Rule of Priority, and which are free from ambiguity:—

Cammarum, Hill, 1756, to replace *Eranthis*, Salisb., 1807.
Cervicina, Delile, 1813, to replace *Wahlenbergia*, Schrader, 1814.
Dondia, Adans., 1763, to replace *Suaeda*, Forskol, 1775.
Pneumaria, Hill, 1764, to replace *Mertensia*, Roth, 1797.
Pubilaria, Rafinesque, 1836, to replace *Simethis*, Kunth, 1843.
Unifolium (Haller) Adans., 1763, to replace *Maianthemum* Weber, 1780.

Cammarum was well described by Hill in the *British Herbal*, p. 47, 1756, and figured on plate 7; the differences between this and the allied genera are clearly stated. The name has been used in the ninth edition of Babington's *Manual of British Botany*, by Greene and others. It is 51 years earlier than Salisbury's genus *Eranthis*. *Cammarum hyemale*, Greene, is the type.

Cervicina, established by Delile in the important *Flore d'Egypte*, p. 150, 1813, where the genus is well defined, and a species is described and figured on plate 5, tab. 2. It is one year earlier than the genus *Wahlenbergia* of Schrader, which was printed in the comparatively unimportant *Cat. Pl. Hort. Goett.* of 1814. *Cervicina* has been used in Babington's *Manual*, l.c., p. 274, in Druce's *Flora of Berkshire*, p. 324, 1897, by Britten in *Bot. Cook's Voyage*, p. 56, by Moore in *Journ. Bot.*, p. 492, 1903, by Hiern in *Cat. Welw. Afr. Plants*, i., p. 631, etc. *Cervicina campanuloides*, Delile, is the type.

Dondia, founded by Adanson in the *Familles des Plantes*, p. 261, 1763, twelve years prior to Forsköl's genus *Suaeda*. *Dondia* is employed in Britton and Brown's *Flora of the North. United States*, i., p. 584, by Small in *Bull. New York Garden*, by Heller in *Cat. N. A. Plants*, by Nelson in *Coulter's Bot. Gazette*, by Druce in *Ann. Scot. Nat. Hist.*, p. 42, 1896, etc. *Dondia maritima*, Druce, is the type.

Pneumaria was established by Hill in the *Vegetable System*, vii., p. 40, 1764; it is thirty-three years earlier than Roth's *Mertensia*, and has been used in Babington's *Manual*, p. 295, in *American Check List*, etc. *Pneumaria maritima*, Hill, is the type.

Pubilaria, Rafinesque, published in the *Fl. Tellur*, ii., 27, 1836, with one species described. It is seven years earlier than *Simethis*, Kunth. The name is used in Babington's *Manual*, p. 422, in Druce's *List of British Plants*, etc. The type is *Pubilaria planifolia* (*P. bicolor*, Rafin.).

Unifolium, founded by Haller in 1746, and established by Adanson in the *Familles des Plantes*, ii., p. 101, 1763, was also used by Allioni in the *Flora Pedemontana*, i., p. 114, 1785, and is used by Britten and Greene in *Bull. of Torrey Club*, p. 287, 1888, by Kuntze in *Rev. Gen. Pl.*, p. 18, 1891, etc. It is 17 years earlier than *Maianthemum* of Weber. The type is *Unifolium Bifolium*, Kuntze.

PERSONAL NOTES.

THE VICOUNTESS WOLSELEY has given a Library of Horticultural Books to Hove in memory of her father.

GREGORY, Sir RICHARD, the Editor of *Nature*, presided at the twenty-ninth annual congress of the South-Eastern Union, at Guildford, on May 28-31 inclusive.

TRAIL, Professor JAMES W. The Memorial Plaque has been placed in the Cruickshank Botanic Garden at Aberdeen. The fund was raised by Dr Macgregor Skene and amounted to £324 19/-, and was sufficient to pay for the well-deserved memorial to a most industrious recorder and investigator of the Scottish Flora. It is a great pity that the mass of Scottish records which he accumulated could not be published in one volume. Miss Alice B. Woodward designed the mural Tablet. "The head is surrounded by a wreath of oak leaves, acorns and galls, the galls of Scotland having proved a favourite object of studies. The decorative panel represents a dragon-fly and a water spider, representatives of his zoological interests, and a bladderwort representative of his work of the Scottish Flora. The whole is flanked by two Brazilian Palms, the family which was the subject of his first important scientific work after his return from the Amazon." The tablet is inscribed, "He knew and loved the realm of living nature, and inspired successive generations of students with his desire for deeper knowledge."

HANBURY, F. J., F.L.S., V.M.H. The Gardens, Brockhurst, East Grinstead (Printed for private circulation). Folio, pp. xvi., including two reprints from *Country Life*. This gives admirable photographs of one of the finest rock gardens in Britain. There is also a heath garden and there are few places where *Erica vagans* grows more luxuriantly than at Brockhurst. Rhododendrons are magnificent and in considerable variety. The garden is remarkable for the number of rare British plants it contains and Mr Hanbury is anxious that members will send him seeds or cuttings of rare native species. He will defray costs of postage.

VARIOUS NOTES.

THE Centenary of the Royal Botanic Garden at Edinburgh was celebrated in June 1924. But the Edinburgh Garden dates back to 1661 when the Governors of Heriot's Hospital were alive to the value of such an institution and gave orders that a portion of the land under their control should be used for such a purpose. Two eminent physicians, Sir Andrew Balfour and Sir Robert Sibbald, shortly after obtained some ground close to Holyrood Palace and there founded the first Botanic Garden in Scotland. Balfour had visited the Duke of Orleans' garden at Blois where he met the celebrated botanist, Dr Robert Morison, afterwards the first Regius Professor of Botany at Oxford. Sibbald was the author of "Scotia Illustrata," published in 1684, which contains the first published records of many Scottish plants. Linneaus named the Rosaceous genus *Sibbaldia* in his honour, but it is now merged into *Potentilla*.

HATFIELD FOREST, which had been given to the nation by Mr E. N. Buxton and his family, was formally opened by the Viscount Ulleswater in May 1924.

LINNAEUS. We learn (*Gardeners' Chronicle*, 363) that a Linnean Museum has been made at Upsala in the old greenhouse of the restored Linnaean Gardens. Among other exhibits shown are his silver strawberry bowl, furniture, table china, some of his linen, and his razor.

AMONG the Botanical Meetings of the year, in addition to the Conference and our own excursion to Llanberris in May, the Mycological Society visited Betty y Coed in September, and the Bryological Society were at Llanberris, when a new genus to Britain was discovered.

KEN WOOD. One hundred and twenty acres have been purchased of this estate by public subscription and the land vested in the London County Council. We trust the Council will exhibit all vigilance in order to prevent any damage being done to the existing flora which comprises the very local *Unifolium Bifolium*, *Anemone apennina*, etc. This acquisition will now increase the total area of Hampstead Heath to 804 acres. The cost of the whole amounts to £577,000.

CAMBRIDGE UNIVERSITY PRESS. Volume xix. of the Royal Society's *Catalogue of Scientific Papers*, covering the letters T-Z during the years 1884-1900, will shortly be published by the Cambridge University Press. This volume, the publication of which completes the great work of cataloguing the scientific papers of the nineteenth century, contains 46,811 entries of titles of papers by 7992 authors, with the addition of anonymous papers, and brings the total number of entries for the period 1884-1900 to no less than 384,478, the authors numbering 68,577.

SOCIETY FOR THE PROMOTION OF NATURE RESERVES HANDBOOK FOR 1924. This Society has had very severe losses in the death of its founder, the Hon. N. Charles Rothschild, later of Mr W. R. Ogilvie-Grant, who acted as its first Hon. Secretary, and quite recently of the Hon. E. S. Montague. The seal of the Society consists of a representation of the Kite drawn by Mr G. E. Lodge from an illustration by Mr Thorburn in the beautiful and costly book on the Birds of the British Isles by Lord Lilford. The Kite, according to the poet Clare, was frequent in Northamptonshire at the beginning of the nineteenth century. The President is Viscount Ulleswater. Several additional areas have been obtained.

IBERIAN BIOLOGICAL CONGRESS AT OPORTO, 1921. It adopted in the main the rules of Botanical Nomenclature passed at the Vienna Congress, with some important modifications—(1) unrestricted priority subsequent to 1753; (2) all family names end in *aceae;* (3) generic names are invalid unless used binomially after 1753, if they express positive error, if they are generic names ending in *oides* or beginning with *pseudo;* (4) after 1753 the use of a generic name binomially, or a binomial combination, invalidates its use in a different category; (5) in generic changes the specific name adopted should be the oldest valid one not forming a homonym; (6) on the splitting of a group the original name must be retained for one of the new groups.

LORD DARLING in "The Oxford Circuit" writes on the depredations upon our wild flowers :—

Alas! loud our wail is for thee *aestivalis*,
  Spiranthes—you herald no longer the day;
Near Lyndhurst they spied thee—they cut thee, they dried thee,
  The flowers of the forest are all stolen away.

Thy flowers, *calycinum*, they pluck and they twine,
  With damp *humifusum*—they found thee near Sway.
The bright *Pyrus Malus* next spring-time must fail us:
  For flowers of our forest are all borne away.

Wherever there grows a *Lastrea spinulosa*,
Filix dilatata—next Bank Holiday
Learn'd 'Enry and 'Arriet will cut, and will carry it—
The flowers of New Forest are all torn away.

SUGGESTIONS FOR LABELLING HERBARIUM SPECIMENS BY COL. A. H. WOLLEY-DOD.—Labels should not be less than 3½ in. by 2½ in. They should not be affixed to the specimen or to the sheet. The following information should be given:—

(1) In the top left hand corner, The Catalogue or List Number, indicating which Catalogue or List it is taken from.
(2) In the top right-hand corner, the Collector's Reference Number, which should always be given at least for critical plants.
(3) The Name of the Specimen, including the author of the name, to which may be added " fide ——" if the name has been given by some other person than the collector.
(4) The Place of Gathering, followed by the Name of the Vice-County in which it was found. The number of the V.C. is not necessary in addition to the name.
(5) The Date of Gathering, not the month only.
(6) The Name of the Collector.

LAWSON, MARMADUKE. In my notice of the Oxford Botanic Garden Tercentenary, in treating of Professor Lawson's work, I am afraid I unintentionally minimised its usefulness. He had to carry on without much assistance from the University authorities, and he left Oxford to take up the more congenial position as Government Botanist to the Government of Madras, to superintend two or three Botanic Gardens in the Nilgiris as Director, and also to be superintendent of the extensive and valuable Government Cinchona Plantations. There, as Mr Gamble tells us, he worked hard in both capacities though naturally hampered by becoming the Head when he had no experience of work in the lower grades. He found a useful Herbarium of Madras plants already existing containing not only those sets of plants collected by Wight, Cleghorn, Bidée and others, but also the very important Beddome Herbarium. He set to work, in the intervals of leisure from his other duties, and collected largely, many a foray being in company with Mr Gamble in the search of specimens. This herbarium is being used for Mr Gamble's work on the Madras Flora. It is a very fine one and very well kept, and has since been added to by such collectors as Dr Barber and Messrs Rangachari and Tadulingam. Mr Gamble finds in it many new species which are to be dedicated to Lawson, who was not merely a botanist but a very well read man. His literary tastes undoubtedly appealed to Sir Mountstuart Grant-Duff quite as much as his energies in re-organising two departments that he found badly in need of it. One is grateful to have these details supplied by Mr Gamble and to know that in a larger sphere Lawson was so useful. It will always be greatly to his credit that he instituted the sale of packets of quinine at the lowest price, at the local post-offices, so that the natives could have this fever remedy within their reach.

THE IMPERIAL BOTANICAL CONFERENCE was opened in London on July 7 at the Imperial College under the Presidency of Sir David Prain. The proceedings are fully reported in the *Gardeners' Chronicle* for July, August and September. Among those who took part were Prof. J. Percival, who contributed a delightful paper in which he suggested that plant-breeders should periodically pay some attention to the wild flora of their country. "Nowhere among the natural vegetation are found the large and luscious fruits of the garden, the big edible roots of the Carrot and Beet, or the long-well-filled pods of the Pea and Bean. The all-important cereal crops are also absent. The contrast between the crops of the field and garden and the natural flora is arresting, and when it is realised that the cultivated crops are the descendants of plants once wild the imagination is enlivened and stimulated. The time and exact mode of origin of our cultivated plants is not known. Most of them have been cultivated for not less than three or four thousand years. Though not a single food plant of first-class importance has been added to our fields or gardens within historic time nevertheless, with a few exceptions, the wild prototypes from which the cultivated crops have been derived can be more or less clearly recognised." He then went on to speak of "pedigree selection followed by the progeny test. It is being taught that the single initial selection in self-fertilised plants is alone of value. Once obtain your improved variety and further selection is superfluous.

This is to be regretted, for hereditary variations, mutations, or whatever they may be called do occur in such lines, and it is only by renewed selection that these are discovered and isolated. Even if we were quite certain that the causes which produce fluctuations do not affect the hereditary mechanism of the plant we should be justified in the practice of repeated selections on this account. Variations in one or more of these conditions frequently cause extensive modifications in the yield of a crop. Yields of the same line of cereals grown in different localities often differ very widely; yields even from plots of equal area side by side often differ by 20 to 30 per cent., and yields of neighbouring plants on the plots differ by so much as 100 to 500 per cent." Professor R. G. Stapleton followed with a paper concerning the value of Selection Work in Herbage Plants. He alluded to the fact that Red and White Clover are to all intents and purposes self-sterile. Late-flowering strains in the main tend to be dense, leafy, hardy and persistent—the early-flowering strains lax, less leafy, less hardy, and less persistent, and under natural conditions extreme strains have but little opportunity for cross fertilisation. Dr Professor J. H. Priestly read a paper on Vegetative Propagation. A Session was devoted to the Biological problems of Cold Storage of Apples. A stored apple, unlike the seven ages of man, has but three stages—unripe, ripe and rotten, and one has been always struck in every-day life that the middle stage is comparatively so rare. The speakers included Dr D. Haynes, Dr Franklin Kidd and Dr Cyril West. At the simultaneously-running meeting Dr W. Brown, Mr R. Barnes and others took part treating mainly of fungoid problems relating to the storage of apples. The Best Means of Promoting a Complete Botanical Survey of the Different Parts of the Empire was discussed, Dr A. W. Hill reading the first paper. Lt.-Col. A. T. Gage, I.M.S., also spoke. He showed how much had been done and was still being done in India and evidenced the formation of the Indian Botanical Society and the founding of the Journal of Indian Botany. Professor S. Schönland dealt with some difficulties of the Botanical Survey of the Union of South Africa, and on this Dr I. B. Pole Evans, C.M.G., also contributed a paper. Sylviculture and the relation to it of forest pathology was the subject of a paper contributed by Dr A. W. Borthwick, and a valuable contribution was made by Mr W.

E. Hiley. Dr J. W. Munro's paper treated principally of insect attacks.

ADDITIONS AND CORRECTIONS.

Report 1923.

p. 35. Line 11. Add " See P. MALUS, var. APETALA A. & G., *Nature*, Jan. 29, 714, 1921.

p. 37. Line 8. Dr Thellung thinks the picture of *Heracleum villosum* in *Gard. Chron.* 52, 1923, may be *H. persicum* Desf.

p. 38. Line 11. Dr Thellung thinks it is doubtful if the deposits in which fruits of *Xanthium spinosum* were found near Sofia are of Neolithic origin. He adheres to the geographical origin of the species given in the *Flore Aventice de Montpellier*.

p. 64. Line 15. For "PRATERMISSA" read " PRAETERMISSA.'

p. 167. Line 14. For " Llanyfelach " read " Llangyfelach."

p. 173. Line 14. For " Lhwydeleod " read " Lhwydcoed."

p. 175. Lines 13 and 20. For " Raglan " read " Baglan."

p. 178. Lines 25 and 26. For " Raome and Keighley " read " Ravine and Keighton."

p. 182. Line 26. For "Binscarth" read "Upper Dowscarth."

p. 184. Line 20. For " SPURUM read " SPURIUM."

p. 186. Line 5. For " Pirton " read " Pinton."

p. 193. Line 11. Add " Found by Dr D. SCOTT."

p. 197. Line 16. For " Tun " read " Fur."

Line 27. For " Rhyador " read " Rhuyadder."

p. 200. Line 2. For " H. L. GREEN " read " BOYS."

Line 6. For " Knocking " read " Knotting."

Line 13. For " BOYS " read " GREEN."

p. 210. Line 6. For " Blackhill " read " Blackpill."

Line 26. For " Eyton " read " Egton."

p. 223. Line 7. For " Hopsham read " Topsham."

p. 328. Line 17. After " in size " add " of the kernel."

p. 335. The beautiful photo blocks illustrating this paper on the Oxford Botanic Garden were kindly lent by the the proprietors of the " Chemist and Druggist."

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THE BOTANICAL SOCIETY AND EXCHANGE CLUB OF THE BRITISH ISLES.

REPORT FOR 1924

OF THE

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(CONVENIENTLY ABBREVIATED REP. B.E.C.)

BY THE

EDITOR AND DISTRIBUTOR,

W. O. HOWARTH, Esq., M.Sc., F.L.S.

VOL. VII. PART IV.

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(VOL. VII. PART IV.).

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REPORT FOR 1924

OF THE

BOTANICAL EXCHANGE CLUB

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September 1925.

REPORT OF THE DISTRIBUTOR FOR 1924.

The number of sheets of plants received for the 1924 distribution has dropped below last year's total by nearly 1000. This is not to be wondered at considering the kind of " summer " 1924 gave us. Also some of our esteemed members who have contributed largely in the past, are, through advancing years, finding plant collecting too overtaxing work. They have set an example in the quality of plants selected for distribution, successful drying and orderly arrangement and labelling which many of the younger members are slow to emulate. The total number of sheets dealt with is 4249; the number of gatherings 341.

In view of the enormous task of the Distributor in having to handle so many sheets I wish to appeal on behalf of future Distributors to a stricter observance of the rules. Often, the extra label which the Distributor retains as his record, is omitted; and it would be a great help if those who write their labels would do so legibly, in fact, the one for the Distributor ought to be in block characters. This should appeal especially to those who find out-of-the-way-place names spelt incorrectly in this Report. Additional assistance could be given in not omitting the authority for the plant named, in giving the number of the plant preferably according to Druce's " List," and in stating the vice-comital number of the locality on the label according to Watson's *Topographical Botany*. Several members omitted to enclose a list of the plants contributed with the number of sheets of each plant.

Complaints have been made about the mouldiness of some specimens sent out. The year 1924 was certainly a bad drying year but, taking this into account, lack of care is greatly responsible. Quality rather than mass of material ought to be aimed at. Some of our veteran collectors set a very good example in drying and mounting specimens. The Rev. H. J. Riddelsdell remarks that some collectors do not seem to realise the necessity of very carefully arranging samples of critical species like *Rubus* when drying. The branches of a panicle and all parts of leaves ought to be well spread out, otherwise critical points cannot be determined without forcing and breaking when the specimens are dry.

Members are deeply indebted to those who, as a result of critical study of special groups of plants, have been able to give their valued opinion on specimens submitted to them. Messrs Riddelsdell and Barton have together gone over the specimens of *Rubus*. The former has again, in addition to his general contribution, made up parcels of *Rubus* specimens for those who have supplied him with their desiderata. Will any other members who want *Rubus* let him know, and send him their list of desiderata? His address is Bloxham, Banbury, Oxon. Mr J. E. Little has been untiring in his efforts to solve the problems offered by difficult *Salix* hybrids, etc., and the copious notes on these plants in the Report are largely due to his energy. Lt.-Col. Wolley-Dod has seen the entire gatherings of the roses contributed by Mr C. E. Britton. Valuable work could be done by others who are willing to concentrate on particular types by growing them and keeping them under observation. Thanks are due to Messrs Drabble, Pearsall, Lumb, Cryer, Britton, Salmon, Fraser, Bennett and others for acting as referees.

W. O. Howarth.

The University, Manchester.

LIST OF PARCELS RECEIVED.

	No. of Specimens.
W. C. Barton,	84
S. H. Bickham,	29
W. Biddiscombe,	74
Miss R. Bright,	26
C. E. Britton,	135
G. C. Brown,	242
R. J. Burdon,	102
R. & M. Corstorphine,	25
J. Cryer,	83
L. Cumming,	182
H. Downes,	155
G. C. Druce,	556
W. S. M. D'Urban,	36
J. Fraser,	75
Miss I. M. Hayward,	31
H. H. Johnston,	157
J. E. Little,	244
R. Melvill,	93
D. P. Murray,	99
National Museum of Wales,	59
H. J. Riddelsdell,	391
F. Rilstone,	41
F. Robinson,	126
Miss I. M. Roper,	155
C. E. Salmon,	54
R. L. Smith,	104
C. Waterfall (1923 and 1924),	613
J. W. White,	169
Miss A. Wilkinson,	70
A. H. Wolley-Dod,	29
	4240

Ranunculus acris L., var. *Friesianus* Rouy & Foucaud. Hallen Marsh, West Gloucestershire, v.-c. 34, August 9, 1906. Well-studied material that was used in compiling my Flora of Bristol.—J. W. White.

Ranunculus bulbosus L., f. *albonaevus* Jord. [Ref. No. 20.] Field, Redland, Bristol, W. Gloucestershire, v.-c. 34, August 30, 1924. This appears to agree with one of the five forms described by Rouy—" feuilles tachées de blanc, velues, à dents sub-obtuses."—Ida M. Roper. " Jordan described his plant as a species, not a form. In these examples one is unable to see if the leaves are all ' tachées de blanc,' nor can they be described as ' velues,' nor is the corm ' grosse, déprimée,' but it is a striking form of *R. bulbosus* L."—Druce.

Ranunculus trichophyllus Chaix. [Ref. No. 17.] Pond, Brockley Combe, N. Somerset, v.-c. 6, May 7, 1924.—Ida M. Roper. "Having collapsing leaf-segments, and carpels glabrous or nearly so. The facies resembles rather var. *Drouetii* (F. Schultz), to which Pearsall's keys run it down. It seems to fit Boreau's description of *R. Drouetii*."—Little. " My plants are rather too young, and show no mature fruits. As they stand, they are nearer the var. *Drouetii* than the type, which is usually a more robust plant."—Pearsall.

Ranunculus Ficaria L., forma *luxurians* Moss. St Aubyn, Jersey, May 1923.—G. C. Druce.

Caltha radicans Forster. Ditch, Carmyllie Moor and ditch near Guynd, Forfarshire, v.-c. 90, July 1924. Abundant in both these stations and not infrequent in Forfarshire, this plant is probably more common in Britain than the records show.—R. & M. Corstorphine.

Meconopsis cambrica Vig. Woods, side of incline at the Cambrian Slate Quarries, Glyn Ciriog, Denbighshire, v.-c. 50, July 11, 1923.—C. Waterfall.

Fumaria Bastardi Bor. (=*F. confusa* Jord.) Garden weed, Brookfield, Bovey Tracey, S. Devon, v.-c. 3.—C. Waterfall.

Barbarea intermedia Bor. Near " Rising Sun," Milland, W. Sussex, v.-c. 13, May 4, 1924.—J. E. Little.

Barbarea intermedia Bor. Headbourne Worthy, S. Hants, v.-c. 11, May 7, 1924.—J. E. Little. " This is a N.C.R. for v.-c. 11." —Druce.

Arabis hirsuta Scop. Rocks, Chee Dale, near Buxton, Derbyshire, v.-c. 57, May 1924.—D. P. MURRAY.

Arabis petraea Lam. Sgurr Alastair, Skye, v.-c. 104, June 1921.—G. C. DRUCE.

Draba muralis L. Wood clearing, Wye Downs, Kent, v.-c. 15, May 22, 1923.—Coll. Miss M. COBBE; comm. F. RILSTONE. "Yes." —DRUCE. Rocks near Chee Dale, Buxton, Derbyshire, v.-c. 57, May 1924.—D. P. MURRAY. "Yes."—DRUCE.

Erophila verna DC., var. *majuscula* Jord. Ringwood, on Bracklesham Sands, April 16, 1924.—J. CRYER. "I should not refer this to *majuscula*."—DRUCE. Boreau and Clavaud merge the restricted *E. verna* under *E. majuscula*, and I suppose Mr Cryer's plant would come under *E. majuscula* in this wider sense. But if it is to be further segregated, it appears to come, not under Rouy and Foucaud's *Draba majuscula* (as a sub-species), regarded as the equivalent of *E. majuscula* Jord., but under their *D. vulgaris* (sub-species), the equivalent of *E. verna* E. Meyer."—LITTLE.

Cochlearia officinalis L. Foot of cliffs in Cheddar Gorge, N. Somerset, v.-c. 6, May 22, 1924.—J. W. WHITE.

Sisymbrium pannonicum Jacq. Waste ground, Midsomer Norton, Somerset, v.-c. 6, September 1, 1924.—H. DOWNES. "Yes, the older name is *S. altissimum* L."—DRUCE.

Brassica? St Ouen, Jersey, May 16, 1924.—L. CUMMING. "This is *Diplotaxis tenuifolia* DC."—DRUCE. "*Diplotaxis tenuifolia* DC. Reported from this station in Lester-Garland's Flora."—SALMON.

Bursa gallica E. At. [Ref. No. BB 45.] Woodstock, Oxon, v.-c. 23, June 1924.—G. C. DRUCE.

Coronopus didymus L. Ditch at foot of wall, St Mawes, W. Cornwall, v.-c. 1, June 23, 1924.—C. WATERFALL.

Lepidium Draba L. Wayside, Lyng, S. Somerset, v.-c. 5, June 1, 1924.—H. DOWNES. "Yes."—DRUCE.

Lepidium campestre Br. Quantity in open ground about a cart track, etc., Lidcomb Wood, Seanway, E. Gloster, v.-c. 33, August 15, 1924. Possibly but not certainly introduced.—H. J. RIDDELSDELL. Grassy hedgebank near Brookfield, Bovey Tracey, S. Devon, v.-c. 3, June 15, 1924.—C. WATERFALL. "The long style, although the plant is young, and the base of the stem lacking, shows that it is *L. Smithii* Hook. = *L. heterophyllum* Benth., var. *canescens* Gren. & Godr."—DRUCE.

Hutchinsia petraea Br. Rocks, Chee Dale, near Buxton, Derbyshire, v.-c. 57, May 1924.—D. P. MURRAY.

Bunias orientalis L. West Wycombe, Bucks, v.-c. 24, July 1924. —G. C. DRUCE.

Reseda lutea L., var. [Ref. No. 2712.] Long Plantation, Chipstead, Surrey, v.-c. 17, August 21, 1924.—C. E. BRITTON.

Viola sylvestris Kit. Elsfield, Oxon, v.-c. 23, April 1893.—G. C. DRUCE. Seen by Mrs GREGORY.

Viola hirta L. Roade, Northants, v.-c. 32, May 1913.—G. C. DRUCE. Seen by Mrs GREGORY. "Poor material, but from the size of the flowers and the shagginess of leaves and peduncles is probably var. *hirsuta* Lange."—I. M. ROPER.

Viola arvensis Murray, var. *Déséglisei* (Jord.). Charlbury, Oxon, v.-c. 23, June 1922, not typical.—G. C. DRUCE. Seen by Dr DRABBLE.

Viola arvensis Murray, var. *obtusifolia* (Jord.). Arable land (potatoes), near Whitby, The Wirral, Cheshire, v.-c. 58, August 30, 1924.—C. WATERFALL. "My specimen is a scrap, and shows neither roots nor lower leaves. It is abnormal with some of the leaves in opposite pairs. For identification such fragments are useless."—DRABBLE. Evenley, Northants, v.-c. 32, June 1920.—G. C. DRUCE. Seen by Dr DRABBLE. Tackley, Oxon, v.-c. 23, 1906. Leaves more acute than usual.—G. C. Druce. Seen by Dr DRABBLE.

Viola Curtisii Forster, var. *Pesneaui* (Lloyd) Rouy & Fouc. Heathland, Burnham St Gregory, W. Suffolk, v.-c. 26, August 3, 1924. From an inland locality on chalky heathland, plants small and rather gone over, but I think quite characteristic and agreeing with my maritime specimens passed by Dr Drabble. Flowers in variable shades of purplish blue, and one plant with wholly yellow flowers.—G. C. BROWN. "Yes, this inland plant, which I have seen before, is of great interest."—Drabble.

Viola lutea Huds. Moors above Millers Dale, Derbyshire, v.-c. 57, June 1924.—D. P. MURRAY. "Yes, the ordinary, typical *lutea* of the upland limestone grasslands. I have never seen a moorland specimen like this."—DRABBLE.

Viola arvensis Murray, var. ?. Evenley, Northants, v.-c. 32, June 1920.—G. C. DRUCE.

Silene conica L. Corbière, Jersey, May 14, 1924.—L. CUMMING.

Silene anglica L. Corbière, Jersey, May 21, 1924.—L. CUMMING.

Cerastium nigrescens Edm. Ben Nevis, Westerness, v.-c. 91, July 1920.—G. C. DRUCE.

Cerastium tetrandrum Curt. [Ref. No. BB. 671.] Dunes near Loch Spiggie, Zetland, August 1924. Very luxuriant specimens (forma *luxurians* Dr.), a foot high in sheltered spots on the dunes.—G. C. DRUCE. Mudeford, S. Hants, v.-c. 11, sandy seashore, April 21, 1924.—J. CRYER. "Yes, very small examples."—DRUCE.

Arenaria trinervia L. Winter flowering form. Dry shady bank and wall top, Countess Wear, near Exeter, S. Devon, v.-c. 3, November 7, 1924. In January 1923 I observed a very small form of this plant in flower on the top of the river wall here. In March last a larger form was flowering freely amongst grass in shady spots in the shrubbery. In October and November of this year the form, of which specimens are distributed, was flowering and fruiting in profusion on a dry bank under the shade of old elm trees. This form in its mode of growth and habit is very unlike the larger plants flowering in May and June. It has no similarity in appearance to *Stellaria umbrosa* as described in the Manuals. It is stiffer, more tufted, and has smaller flowers. I cannot count more than seven stamens, but more may be present. May and June are given in most books as the time of flowering. Mr T. R. A. Briggs in his *Flora of Plymouth* says, "March or April to June." I believe it flowers all the year round in this place.—W. S. M. D'URBAN. See *Rep. B.E.C.* 434, 1924.

Sagina apetala Ard. Milcombe, Oxon, v.-c. 23, September 17, 1924. As this form has a peculiar appearance, it seemed worth while distributing it in case it may be *Reuteri*, which I do not know.—H. J. RIDDELSDELL. "*S. apetala*, rather starved form."—DRUCE. "*S. filicaulis* Jord."—SALMON.

Sagina apetala Ard., var. *Reuteri* Boiss. Corbière, Jersey, May 20, 1924.—L. CUMMING. "Quite unlike *S. Reuteri*; it is clearly S. *ciliata* Fr."—SALMON.

Sagina maritima Don. Corbière, Jersey, May 14, 1924.—L. CUMMING. "My specimens appear to be the variety *prostrata* Towns. See *Rep. B.E.C.* i., 438, 1894."—DRUCE.

Sagina procumbens L. Corbière, Jersey, May 17, 1924.—L. Cumming. "Are these not *S. subulata* Presl?"—Druce. "Not *procumbens; subulata*, I believe."—Riddelsdell.

Spergularia marginata Kitt. Corbière, Jersey, May 18, 1924.—L. Cumming. "My specimens are young, but they belong to *S. rupestris* Lebel."—Druce.

Claytonia perfoliata Donn. Sandy seashore, Mudeford, S. Hants, v.-c. 11, April 21, 1924.—J. Cryer.

Montia fontana L., var. *major* All. St Ouen, Jersey, May 15, 1924.—L. Cumming. "This is *M. verna* Neck., var. *major* Schrad."—Druce.

Hypericum perforatum L. Chalk rubble, Port Meadow, Oxford, v.-c. 23, July 1893.—G. C. Druce.

Hypericum perforatum L., var. *angustifolium* DC. [Ref. No. 2671.] Wood near Farley, Surrey, July 6, 1924. A form of frequent occurrence with the broader-leaved plant.—C. E. Britton.

Lavatera arborea L. Grassy cliff slopes above Mullion Cove, W. Cornwall, v.-c. 1, July 5, 1924.—C. Waterfall.

Malva moschata L. Waste ground above roadside near the Mullion Cove Hotel, W. Cornwall, v.-c. 1, July 5, 1924.—C. Waterfall.

Geranium celticum Ostenf. Hort. Oxford. From Ballyvaughan, Co. Clare, Ireland, 1921.—G. C. Druce.

Erodium maritimum Sm. Near Morte Point, N. Devon, v.-c. 4, August 1924.—Coll. Miss T. Cook; comm. W. Biddiscombe.

Euonymus europaeus L., with cream coloured fruit. Conigree Wood, Ledbury, Hereford, v.-c. 36, November 27, 1924.—S. H. Bickham. "Yes: the fruits are cream-coloured as stated; the aril of the seeds is also paler orange. This must be rare. The fruits more often vary with deeper shades of red."—Fraser. "A striking form not often seen wild. The seeds of a similar plant recorded by me in *Journ. Bot.* 1913 yielded on cultivation fruit which had reverted to type."—I. M. Roper.

Rhamnus catharticus L. Broughton, Oxon, v.-c. 23, September 13, 1924. The form with hairy underleaf. The species occurs only in scattered groups in this neighbourhood, and varies in the quantity of hair on the leaf.—H. J. Riddelsdell.

Genista tinctoria L., var. *humifusa* Dicks. Grassy cliff slopes above Mullion Cove, June 28, 1924, and downs above Kynance Cove, W. Cornwall, v.-c. 1, July 2, 1924.—C. WATERFALL.

Trigonella ornithopodioides DC. [Ref. No. 1673.] "Newport," Countess Wear, Exeter, S. Devon, v.-c. 3, June 1924. Adventive in stableyard; not found elsewhere within five miles. A single plant came up between the cobble stones, with which the stableyard is here paved, in May 1924, and several plants were there in April 1916. It was not noticed again until May 1924 when many luxuriant plants came up in the same spot where the first appeared. They were in fruit in June. A dressing of garden salt had been applied in 1923 to kill the weeds in the yard. Although surrounded by high walls a great variety of plants has appeared from time to time in this yard. The *Trigonella* is plentiful on Dawlish Warren, and it has been found on the golf links at Exmouth. These stations, five miles distant, are the nearest to us.—W. S. M. D'URBAN.

Medicago sp. Waste ground, Barry, Glamorgan, v.-c. 41, May 25, 1924. This plant agrees with the description of *Medicago agrestis* Ten., but I have no authentic specimen. It may not be a European species for the same patch of ground yielded plants from both hemispheres.—R. MELVILL. "*Medicago truncatula* Gaertn., I believe."—CRYER.

Medicago denticulata Willd. Grouville, Jersey, May 19, 1924.—L. CUMMING. "My specimen is *M. arabica* Huds. Notice the leaf spots."—DRUCE.

Medicago arabica Huds. (=*M. maculata* Sibth.) Grassy roadside above St Mawes, W. Cornwall, v.-c. 1, June 23, 1924.—C. WATERFALL.

Medicago lupulina L., var. *Willdenowii* Mérat. Bledington, E. Gloster v.-c. 33, August 1, 1924. In arable ground, with type.—H. J. RIDDELSDELL. "Yes."—DRUCE.

Melilotus indica All. "Newport," Countess Wear, Exeter, S. Devon, v.-c. 3, May 16, 1923. Adventive in garden; flowered in May and June.—W. S. M. D'URBAN.

Trifolium scabrum L. Corbière, Jersey, May 21, 1924.—L. CUMMING. "Yes."—DRUCE.

Trifolium subterraneum L. Grouville, Jersey, May 19, 1924.—L. Cumming. "Yes."—DRUCE.

Trifolium resupinatum L. Cardiff Docks, Glamorgan. v.-c. 41, September 1924.—R. L. Smith. " Yes."—Druce.

Trifolium strictum L. Corbière, Jersey, May 21, 1924.—L. Cumming. " Yes, but poorly represented."—Druce.

Anthyllis Vulneraria L. Grosnez Castle, Jersey, May 16, 1924.—Coll. Miss B. Arne; comm. L. Cumming.

Lotus siliquosus L. Near Henley, Berkshire, v.-c. 24, July 1924.—G. C. Druce & Dr H. Smith. Hilly pasture, Marshfield, W. Gloster, v.-c. 34, September 3, 1924. First seen by Rev. E. Ellman. On visiting the locality shortly afterwards the plant was found to be scattered sparingly about pastures in the neighbourhood and known to the natives for forty years as " Wild Tom Thumbs." It grows in profusion in one set of pastures which for eighty years were under vegetable cultivation until 1915 when the whole was laid down to grass.—Ida M. Roper. " Correctly named."—Druce. " Yes; found many years ago in this county at Chepstow."—Riddelsdell.

Lotus uliginosus Schkuhr, var. *glaber* Bréb. Bullingdon, Oxon, v.-c. 23, July 1893.—G. C. Druce.

Lotus corniculatus L., var. *ciliatus* Koch. Chalk rubble, Port Meadow, Oxford, v.-c. 23, 1893.—G. C. Druce. " Appears to agree with Koch's description."—Salmon.

Lotus hispidus Desf. Near Morte Point, N. Devon, v.-c. 4, August 1924.—Coll. Miss T. Cook; comm. W. Biddiscombe. Dry shrubby bank between the Lizard Head and lighthouse, W. Cornwall, v.-c. 1, June 3, 1924.—C. Waterfall. " Both correctly named."—Druce.

Lotus angustissimus L. Arable ground, Byfleet, Surrey, v.-c. 17, September 1924.—Coll. Lady Davy; comm. G. C. Druce. Near Morte Point, N. Devon, v.-c. 4, August 1924.—Coll. Miss T. Cook; comm. W. Biddiscombe. " Correct."—Druce.

Astragalus glycyphyllos L. Amongst grasses, shrubs, etc., Marfow Woods, Denbighshire, v.-c. 50, July 21, 1923.—C. Waterfall.

Ornithopus perpusillus L. Roadside, near Helsby Cliff, Cheshire, v.-c. 58, June 27, 1923.—C. Waterfall.

Ornithopus pinnatus Druce. Corbière, Jersey, May 17, 1924.—L. Cumming. " This is *O. perpusillus* L."—Druce.

Coronilla varia L. Grosnez Castle, Jersey, May 16, 1924.—Coll. Miss B. ARNE; comm. L. CUMMING. "This is *Hippocrepis comosa* L."—DRUCE.

Onobrychis viciaefolia Scop. Roadside, Aller, Langport, Somerset, v.-c. 5, June 10, 1924.—H. DOWNES. "Yes now to be known as *Onobrychis Onobrychis* (L.) Karst."—DRUCE.

Vicia tetrasperma Moench. Sea cliff, Lysfaen, Old Colwyn, Denbigh, v.-c. 50, August 1924.—AGATHA WILKINSON. "This is *V. sylvatica* L."—DRUCE.

Vicia Orobus DC. [Ref. No. 24.1.] Meadow between Torpantau and the Brecon Beacons, v.-c. 42, September 1924.—Coll. A. E. WADE; comm. NATIONAL MUSEUM OF WALES.

Vicia lutea L. Corbière Castle, Jersey, May 17, 1924.—L. CUMMING. "Yes, discovered in this locality a few years ago by Lady Davy."—DRUCE.

Vicia Lathyroides L. Corbière, Jersey, May 15, 1924.—L. CUMMING.

Vicia gracilis Lois. Field at foot of Blackdown, Lurgashall, W. Sussex, v.-c. 13, July 19, 1924.—R. J. BURDON. "I agree. Pods 1-4, glabrous; leaflets in 3-4 pairs, acute or acuminate, seeds 5-8 in a pod."—FRASER. "Yes, Schinz and Thellung suggest that *gracilis* should be superseded by *V. tenuissima* (Pers.) Sch. & Thell., but I am not quite convinced that the trivial belongs to this species."—DRUCE.

Lathyrus sylvestris L. Creeping over shrubs on cliff top, Salterne Cove, near Paignton, S. Devon, v.-c. 3, July 9, 1924.—C. WATERFALL.

Lathyrus Nissolia L. Denham, Bucks, v.-c. 22, June 26, 1924.—W. C. BARTON. "I agree. Tendrils absent; leaves simple; peduncle usually one-flowered, but one has two flowers. The description of Linnaeus says one-flowered, but I have several twin flowers on a Surrey plant. Stipules very small, subulate."—FRASER. Near Wootton, Berks, v.-c. 22, June 1920.—G. C. DRUCE.

Psoralea bituminosa L. Waste ground, Cardiff Docks, Glamorgan, v.-c. 41, September 15, 1924. The fresh plant has a distinct tarry odour which it loses on drying.—R. MELVILL. "Yes."—DRUCE.

Dorycnium herbaceum Vill. Barry Docks, Glamorgan, v.-c. 41, August 1924. This pretty South European alien was found as one single plant which produced hundreds of flower-heads, but not a vestige of fruits. In *Rep. B.E.C.* 34, 1923, the flowers of this plant are said to be pale blue, whereas they are pure white.—R. L. SMITH. "Correctly named."—DRUCE.

Prunus Padus L. Hedgerow, bank of Whilon Beck, near Boot, Eskdale, Cumberland, May 28, 1923.—C. WATERFALL.

Spiraea Filipendula L. Old quarry on the roadside going towards Pradonnack, W. Cornwall, v.-c. 1, July 4, 1924.—C. WATERFALL.

Rubus. In each case where *Rubus* specimens are not of Rev. H. J. Riddelsdell's sending, he and Mr Barton have only seen one sheet and their naming is confined to that sheet.

Rubus imbricatus Hort. [Ref. No. 2077.] Middlewick, Colchester, N. Essex, v.-c. 19, August 1, 1924.—G. C. BROWN. "Yes; this is *imbricatus* though not quite the type. Leaves felted below, as seems to be usual in East Anglia, and to occur sometimes in the Western Counties."—RIDDELSDELL & BARTON.

Rubus nemoralis P. J. Muell., var. *cornubiensis* Rogers MS. Roadside near Perranzabuloe Church, W. Cornwall, v.-c. 1, August 27, 1924.—F. RILSTONE. "This is *R. nemoralis* P. J. Muell., var. *cornubiensis* Rog. & Ridd. (See *Journ. Bot.* 1925, p. 14.) The gathering hardly shows any sign of the lengthening lower branches characteristic of the typical panicle; though sometimes the variety shows this feature well."—BARTON & RIDDELSDELL. [Ref. Nos. 901, 902, 903, 904.] Par and Polperro, E. Cornwall, v.-c. 2, July 1924. This variety according to Rilstone is frequent over the northern part of the western half or two-thirds of Cornwall. Polperro is about the easternmost station known for it. The Par gatherings were made on exposed sandy ground.—H. J. RIDDELSDELL. BARTON agrees.

Rubus villicaulis Koehl. [Ref. Nos. 905, 906.] In good quantity and fairly typical above Lidcomb Wood, Stanway, E. Gloster, v.-c. 33, August 1924, at 900 feet elevation. Also at Hailes Wood. The good bramble ground of the Cotteswolds is almost always on the top of the hills, generally but not always among trees or near a wood. Enormous quantities of *raduloides*, with *dasyphyllus*, a form of *curvidens*, *echinatus*, *radula*, etc., and more isolated patches of *villicaulis*, *Godroni*, *nutans*, etc., make bramble hunting an interesting pursuit. Lower down the hills the interest almost ceases.—H. J. RIDDELSDELL. BARTON agrees.

Rubus leucandrus Focke. [Ref. No. 910.] Not infrequent in the Lostwithiel-Liskeard-Callington area, E. Cornwall, v.-c. 2, August 1924.—H. J. RIDDELSDELL. " This is the plant specially referred to by Rogers (*Handb.* p. 37). Stem not blunt angled, leaves broadly elliptical; panicle young and untypical."—BARTON & RIDDELSDELL.

Rubus Godroni Lec. & Lam. [Ref. No. 914.] In plenty, and in fairly typical form at Colesborne on the road to Hilcot for one-third of a mile, E. Gloster, v.-c. 33, August 4, 1924. Also at Polperro and Looe, E. Cornwall, v.-c. 2, July 1924. [Ref. Nos. 912 and 913.]—H. J. RIDDELSDELL. BARTON assents.

Rubus macrophylloides Génév. [Ref. No. 918.] A plant very common in S.E. Cornwall, v.-c. 2, and further west too, as well as in S. Devon, v.-c. 3, and named thus by Rogers. But *macrophylloides* Génév. is simply a glandular *Schlechtendahlii;* and though the Cornish plant is systematically akin to the latter, it is certainly something more than *Schlechtendahlii* with glands. It is possibly a local form which will one day have to be named. July 1924.—BARTON & RIDDELSDELL.

Rubus Schlechtendahlii Weihe. [Ref. No. 916.] One spot by Stanway Ash Plantation, between Stanway and Snowshill, E. Gloster, v.-c. 33, c. 800 feet, August 13, 1924. A form showing some approach to *R. amplificatus* Lees. Also in a copse in shade at Llangattock, Monmouth, v.-c. 35, September 28, 1924. [Ref. No. 917.]—H. J. RIDDELSDELL. BARTON agrees.

Rubus Questierii Lefèv. & Muell.? [Ref. No. 2194.] Lane. Boxted Heath, N. Essex, v.-c. 19, August 5, 1924. Rev. H. J. Riddelsdell on examination of my 1920 and 1922 gatherings of this bush was disposed to definitely name it *Questierii*, but later in 1922 said " Fresh material this year makes me more doubtful, do not record." —G. C. BROWN. " This appears to belong to a series of plants, common in the eastern counties, which we have been putting to *criniger*. I suppose it is from the same bush as Brown's Nos. 1826 and 1969. There is grave doubt of its being *Questierii* for the characteristic white felt of the rachis is lacking (though Foxholes Wood has produced specimens very like this which were passed by Rogers). —BARTON & RIDDESDELL.

Rubus adscitus Génév. [Ref. No. 919.] On cliffs, Looe and neighbourhood, frequent in E. Cornwall, v.-c. 2, July 1924. Hailes and Guiting Woods, E. Gloster, v.-c. 33 [Ref. Nos. 920, 921], August 1924. Nearly at sea level in Cornwall, at about 900 feet in E. Gloster.—H. J. RIDDELSDELL. BARTON accepts.

Rubus curvidens Ley. [Ref. No. 923.] In a less glandular form than the type, with densely felted leaves. Scattered in quantity over the N. Western Cotteswolds, E. Gloster, v.-c. 33, August 1924. Up to 1000 feet and down lower than most except the very common species (to 450 feet). Agrees exactly with a W. Gloster plant so named by Rogers. Passed by BARTON.—H. J. RIDDELSDELL.

Rubus anglosaxonicus Gelert, var. *raduloides* Rogers. [Ref. No 928.] In many places, and usually in great quantity over the N.W. part of the Cotteswolds, v.-c. 33, at 800-1000 feet, keeping constant and typical and easily recognisable, August 1924.—H. J. RIDDELSDELL. BARTON agrees.

Rubus raduloides Rog. Clifton Down, Bristol, W. Gloster, v.-c. 34, July 24, 1924.—J. W. WHITE. "Weak, but unmistakable."—RIDDELSDELL.

Rubus infestus Weihe, var. *virgultorum* Ley. [Ref. No. 938.] Horspath, for a quarter of a mile along a roadside hedge, Oxford, v.-c. 23, September 12, 1924; duce DRUCE.—H. J. RIDDELSDELL. BARTON agrees.

Rubus uncinatus P. J. Muell. [Ref. Nos. 935, 936, 937.] Several places in Troy Wood, Monmouth, v.-c. 35, September 27, 1924. Certainly seems to be the plant discovered here long ago by E. F. Linton, and described by Rogers in the *Handbook*. The present gathering differs in some respects from Rogers' description; in one important point at least (direction of the sepals) differing from the *Handbook* but agreeing exactly with Mueller's description. Focke's mature opinion still assigns our plant to *uncinatus*. N.B.—In old age of the leaves, the teeth coarser but remain sharp-pointed.—H. J. RIDDELSDELL. BARTON agrees.

R. ? uncinatus P. J. Muell. [Ref. Nos. 929-934.] C. E. Britton's locality, Mop End, Amersham, Bucks, v.-c. 24, September 12, 1924. Clearly not quite the same as the Monmouth plant (probably because in greater exposure) but so near it, especially in armature, that Rogers was amply justified in placing it here with a "probably."—H. J. RIDDELSDELL. "It is not easy to separate these specifically from the Monmouth plant. Rogers' *Handbook* diagnosis was apparently made from the latter without reference to P. J. Mueller's description. Focke, who saw living specimens in Mueller's original locality, differs considerably from Rogers in his description, which covers these specimens better than does Rogers'. So also with Sudre. It seems to me that if these really agree with Mueller's plant, the cuneate based leaflets, etc., of the Troy Wood plant would make that rather a variation from type."—BARTON.

Rubus radula Weihe, var. *echinatoides* Rog. [Ref. No. 939.] Mop End, Amersham, Bucks, v.-c. 24, September 12, 1924. Already known from Naphill and Beaconsfield in Bucks.—H. J. RIDDELSDELL. BARTON agrees.

Rubus echinatus Lindl. [Ref. No. 940.] Hill on Chipping Norton Road, S. Newington, Oxon, v.-c. 23, August 30, 1924; Llangattock vibon Avel, Monmouth, v.-c. 35, September 28, 1924. There is no valid reason for rejecting Lindley's name in favour of *discerptus;* it applies unmistakably to the present plant.—H. J. RIDDELSDELL.

Rubus cenomanensis Sudre. [Ref. Nos. 942, 3, 4, 5, 7.] Mostly from E. Cornwall, near Looe, v.-c. 2, July 1924; also from woods near Monmouth, v.-c. 35, September 27, 1924 [Ref. No. 946.] There is a good deal of variation in glandular development in the Cornish plant, but I think the gatherings cannot be separated from one another, and indeed Rogers' own herbarium allows for this feature. In the case of this species I am able to accept Sudre's name, because I have seen his own authentic specimen, but he is untrustworthy as a rule either to follow or to quote.—H. J. RIDDELSDELL. "Yes, panicle with ultra-axillary part less compact than usual; luxuriant as frequently in Cornish specimens."—BARTON.

Rubus melanodermis Focke. [Ref. No. 948.] The only place I saw this species in normal form in E. Cornwall, v.-c. 2, was on the cliff at Looe, July 1924. New County Record.—H. J. RIDDELSDELL. "Yes."—BARTON. Form [Ref. No. 949.] About half a mile inland, Looe, v.-c. 2, July 1924. This is an aberrant from (not I should say a hybrid) with paler and somewhat hairy stem, and with few glands but a good many prickles; in most other respects quite good *melanodermis.*—H. J. RIDDELSDELL. BARTON agrees.

Rubus fuscus Weihe & Nees. [Ref. No. 957.] In quantity at Tedstone Delamere, Hereford, v.-c. 36, August 6, 1924. Edge of a wood, Wigginton Heath, Oxon, v.-c. 23, July 26, 1924 [Ref. No. 956.] Cooper's Hill, E. Gloster, v.-c. 33, August 2, 1924 [Ref. Nos. 953, 4, 5]. The last a slender form growing at 800 feet.—H. J. RIDDELSDELL. "Yes: No. 957 strongly armed, 'almost subkoehlerian;' sepals clasping as in some Sussex and Somerset examples." —BARTON. Fide Dr Focke. Open spots in Leigh Woods, N. Somerset, v.-c. 6, July 14, 1924.—J. W. WHITE. "Yes, certainly, as I understand the species. But this must not be taken for a typical example of *fuscus.*"—RIDDELSDELL.

Rubus fuscus Weihe & Nees, var. *nutans* Rog. [Ref. Nos. 958, 959, 960.] At 800-900 feet elevation, between Stanton and

Snowshill, and behind Lidcomb Wood, E. Gloster, v.-c. 33, August 1924. A form slightly different in stem from the Surrey and Hampshire plant, but clearly almost identical. New to Gloucester County. Recorded from N. Somerset, Bucks, Hereford, Warwick, Staffs, etc. —H. J. RIDDELSDELL. "Yes."—BARTON.

Rubus longithyrsiger Bab. A very interesting and instructive series of plants occurs in the neighbourhood of Looe, which must apparently all be referred *in essentials* to this species, though the varying forms are not widespread enough to merit distinct names. In Cornwall the plant differs considerably from the slender E. Kent form, or the Hereford and ordinary S.W. England form. It is far stouter, with stronger stem, more unequally armed (i.e., nearer *Egregian* in type); leaves more irregularly toothed and with less abruptly cuspidate points; panicle sometimes typical in outline but sometimes less pyramidal and shorter than in type; and with a zigzag rachis. Something approaching this sort of thing was found by Rogers in the Dart Valley, S. Devon, in great quantity. The extreme form is Ref. No. 963 from Polperro; No. 964 recedes a little; Nos. 961 and 962 are still nearer type *longithyrsiger*. All from Looe neighbourhood, E. Cornwall, v.-c. 2, August 1924.—Coll. and comm. H. J. RIDDELSDELL.—BARTON & RIDDELSDELL.

Rubus hystrix Weihe & Ness, var. *infecundus* Rog. [Ref. Nos. 965, 966.] In full exposure at 980 feet at the top of Sudely Hill, close to Guiting Wood, E. Gloster, v.-c. 33, August 14, 1924. A peculiar form with very long, pointed, narrow leaflets.—H. J. RIDDELSDELL. Passed by BARTON.

Rubus rosaceus Weihe & Nees, var. *Purchasianus* Rog. [Ref. No. 967.] Llangattock vibon Avel, and near Troy Wood [Ref. No. 968]; both Monmouth, v.-c. 35, September 1924.—H. J. RIDDELSDELL. Passed by BARTON.

Rubus adornatus P. J. Muell. [Ref. No. 1844.] Heathy roadside, Little Totham, N. Essex, v.-c. 19, July 31, 1924—G. C. BROWN. "No. *R. hystrix* Weihe. I suggested *adornatus* for this in 1920, as well as for a plant from Tiptree Heath; but both are *hystrix*. The only *adornatus* I have seen from Essex is a sheet from Galleywood Common, v.-c. 18; this is good *adornatus*: and one from Berechurch, v.-c. 19, which I think must go there, though I cannot tell for certain without further material."—H. J. RIDDELSDELL.

Rubus fusco-ater Weihe. [Ref. No. 1843.] Heathland, Little Totham, N. Essex, v.-c. 19, July 31, 1924. Rev. H. J. Riddelsdell said *in litt.*, 1921, "*R. fusco-ater*, I am sure, though not absolutely typical."—G. C. BROWN. "I cannot now say positively whether this is *fusco-ater* or *rosacens*. To the latter point the leaf outline and some features of the armature, especially of the panicle. The plant seems to me about intermediate between the two, and might go under either as a form. Barton agrees to this in substance."—RIDDELSDELL.

Rubus plinthostylus Génév. [Ref. No. 969.] Calamasag, E. Cornwall, v.-c. 2, July 5, 1924. Rilstone showed it me here. A strikingly distinct bramble.—H. J. RIDDELSDELL. "Yes, the plant so named by Rogers."—BARTON.

Rubus Marshalli Focke & Rogers. [Ref. No. 970.] Small form, Cooper's Hill, and form between type and var. *semiglaber*, Harefield Hill [Ref. No. 971], both at 800 feet, E. Gloster. v.-c. 33, August 1924.—H. J. RIDDELSDELL. "No. 971, stem not hairy; but not unlike Riddelsdell's 1922 Aberdare specimens."—BARTON.

Rubus viridis Kalt, teste Rev. H. J. Riddelsdell. Hedgerow, Berechurch, N. Essex, v.-c. 19, July 30, 1924. Mr Riddelsdell says of previous gatherings [Ref. Nos. 1509 & 2107]—"All *viridis* and quite good. N.C.R. for v.-c. 19."—G. C. BROWN. "If this is from the same bush as Brown's 2107, it is *viridis*. But I think I could not have got at the truth from the inadequate, weak, broken and untypical specimen before me. If my sheet is average in quality, I should advise members to destroy their specimens as they can only mislead."—RIDDELSDELL.

Potentilla sp. Alien in grass and clover field, Hilcot, E. Gloster, v.-c. 33, August 4, 1924. Flowers large, lemon coloured.—H. J. RIDDELSDELL. "*P. recta* L., and perhaps the var. *sulfurea*."—DRUCE. Dr THELLUNG agrees.

Potentilla argentea L. Quite a large patch was found on a railway bank near Cadoxton, Glamorgan, v.-c. 4, where it was probably introduced, since it was growing in close proximity to *Coronilla varia* L. and *Anthemis tinctoria* L., June 14, 1924.—R. MELVILL. "Yes, not in *Top. Bot.* for v.-c. 41; it may, however, be of adventive origin."—DRUCE. "From the narrow lobes of the leaflets it suggests var. *tenuiloba* Jord."—I. M. ROPER.

Potentilla mixta Koch. Burleigh Meadows, Langley. Hitchin, Herts, v.-c. 20, August 16 and September 20, 1924. Burleigh Meadows, about 5 miles south, is the nearest point to Hitchin at which I have found *P. mixta*. It appears to be absent on the chalk formation proper, and begins to occur only at the limits of the London Clay. It is plentiful at Hertford Heath, and I have found it near Ayot.—J. E. LITTLE.

Alchemilla pastoralis Bus. Orig. Teesdale (A. J. Wilmott), 1923; Hort. Reigate, June and August 1924. It will be seen that the August gathering shows the upper part of the inflorescence considerably more hairy than in the June specimens. When young the leaves and petioles of this species are clothed with an abundance of silky hairs, much more plentifully than in *A. minor* Huds. at the same stage. In fact, unless the inflorescence is examined, the plant is liable to be confused (as Buser points out) with *A. pubescens* Lam.—C. E. SALMON.

Alchemilla glomerulans Bus. Orig. Cairngorms, July 1922; Hort. Reigate, June and August 1924. These examples show the June leaves thinly hairy upon both surfaces, whilst those of the August gathering are almost glabrous. In the original Cairngorm specimens collected in July 1922, the leaves were decidedly more hairy upon both surfaces.—C. E. SALMON.

Rosa mollis Sm. A number of specimens collected by the late Mr Charles Bailey from localities in Derbyshire, v.-c., 57, N.-E. Yorks, v.-c. 62, Northumberland, v.-c. 67, Cumberland v.-c. 70. Kirkcudbright, v.-c. 73, Roxburgh, v.-c. 80, Berwick, v.-c. 81, W. Perth, v.-c. 87. All have been examined by WOLLEY-DOD, comm. by G. C. DRUCE.

Rosa Beatricis. [Ref No. 878.] Troy Woods, Monmouth, v.-c. 35, September 27, 1924.—H. J. RIDDELSDELL. "I fully believe this to belong to the *Scabrata*, for which I regard very strong biserration as important as sub-foliar glands, which may often be absent from considerable portions of a bush. Diligent search reveals one or two here. I have very often observed a connection between strong biserration and sub-foliar glands. This plant falls under my interpretation of f. *Beatricis*, though by description that should have numerous sub-foliar glands."—WOLLEY-DOD.

Rosa glauca Vill., var. *subcristata* Baker. [Ref. No. 868.] Near Broughton, Oxford, v.-c. 23, September 13, 1924.—H. J. RIDDELSDELL. "Rather rare in the South and Midlands. I have no previous record from v.-c. 23."—WOLLEY-DOD. "Recorded by me for Albury, Oxfordshire, in *Rep. of Bot. Rec. Club* for 1881." —DRUCE.

Rosa glauca Vill., var. *Reuteri* Godet. [Ref. Nos. 866, 867.] Near Bloxham, Oxford, v.-c. 23, September 13, 1924.—H. J. RIDDELSDELL, teste WOLLEY-DOD.

Rosa micrantha Sm. [Ref. No. AA.720.] Whittlebury Forest, Northants, July 1922.—G. C. DRUCE. "*R. micrantha* Sm., under type, but very near No. Z. 991, on which I based the hybrid *R. inelegans* (*R. micrantha* × *arvensis*). There is less evidence in this specimen of any *arvensis* influence."—WOLLEY-DOD.

Rosa tomentella Lém., var. *typica* Ch. [Ref. No. 2717.] Ham Common, Surrey, August 25, 1924. Lt.-Col. Wolley-Dod notes on this gathering that the leaflets are somewhat more narrow and more acuminate than is usual, but that such forms are frequent.—C. E. BRITTON.

Rosa tomentosa Sm., var. *typica* Ch., f. *eglandulosa* W.-Dod. [Ref. No. 2720.] Claygate, Surrey, v.-c. 17, August 27, 1924. Marden Park, Surrey, August 28, 1924 [Ref. No. 2722]. Named by Lt.-Col. Wolley-Dod.—C. E. BRITTON.

Rosa sylvestris Lindl. [Ref. No. 893.] Swerford Heath, Oxford, v.-c. 23, August 30, 1924.—H. J. RIDDELSDELL. "In most respects this is nearest *sylvestris*, except that the sub-foliar glands are too few, and absent altogether from many leaflets. But I would leave it under that name rather than in *scabriuscula* since I have a growing conviction that the presence or absence of sub-foliar glands in roses is of less importance than many people think. It is certainly quite as variable as all other characteristics of roses."—WOLLEY-DOD.

Rosa omissa Déségl., var. *typica* R. Kell., f. *resinosoides* W.-Dod. [Ref. No. 2716.] Ham Common, Surrey, August 25, 1924. This gathering removes the doubt expressed in "Roses of Britain" as to the occurrence of this form in Surrey, and other specimens from Ham and Barnes Commons also confirm var. *typica* as a Surrey plant. Lt.-Col. Wolley-Dod writes of it—"This well exemplifies the importance of late gathering. It is a rose that I have gathered in July in three different years, so have had no opportunity of noting the duration of its sepals. A variety of names have been given to this form, *R. pseudo-rubiginosa* by Ley, *R. sylvestris* by Rogers, *R. subglobosa* by E. F. Linton, *Rosa* near *cuspidatoides* by Crépin, and *R. pseudo-cuspidata* by Sudre and myself, but I now consider it to be *R. omissa*, var. *typica*, f. *resinosoides*. The feature of pendent fruits is unusual, and belongs to *R. mollis*, but, as *R. omissa* reproduces some of the characters of *mollis* it is possible that it may sometimes have pendent fruit."—C. E. BRITTON.

Rosa Lucandiana Déségl. & Gill. [Ref. No. 890.] Near Milcombe, Oxford, v.-c. 23, September 17, 1924.—H. J. RIDDELSDELL. "I have a near approach to this in a specimen by Moyle Rogers from Merton, Oxon, which R. Keller calls var. *incerta*, f. *pseudo-incerta*, on account of its greater degree of biserration, but yours is even more biserrate and has narrower fruit and less hispid. Its full biserration makes it one of the *Aciculatae*, but certainly not my var. *seticaulis*. I do not believe in "matching" roses at sight, but this does look uncommonly like a Shirley (Derby) specimen by W. R. Linton which Keller thought "very near" his *adenocalyx*, but which I put provisionally under *Lucandiana*. There is nothing in the description of var. *Lucandiana* to exclude either that or your specimen, so I should so label it."—Wolley-Dod.

× *Rosa latens* W.-Dod. [Ref. No. 2711.] Hogtrough Bottom, Kingswood, Surrey, v.-c. 17, August 21, 1924. From the locality given for this hybrid in "Roses of Britain." During 1924 more fruit was produced than has been usual in preceding years, and for this reason Lt.-Col. Wolley-Dod thought these specimens would be acceptable to members.—C. E. Britton.

Crataegus monogyna Jacq., forma vel. var. *pendula*. Melmerby, Cumberland, v.-c. 70, June 1924.—Coll. Rev. W. Wright Mason; comm. G. C. Druce.

Amelanchier canadensis Med. Above Valewood House amongst planted pines, Blackdown, W. Sussex, v.-c. 13, April 29, 1924.—J. E. Little and R. J. Burdon. "I am not sure that this is *canadensis* owing to its narrow, spreading sepals and its leaf-shape, may it not be *oblongifolia*? however, Mr Fraser passes it as *canadensis*."—Druce.

Chrysosplenium alternifolium L. Bog near Royal Common. Surrey, April 24, 1924.—W. Biddiscombe.

Parnassia palustris L., var. *condensata* Tr. & Wh. By Loch Spiggie, Zetland, August 1924.—G. C. Druce.

Sedum album L. Stony bank going up to Fort Doyle, Guernsey, July 1924.—Fred Robinson. "Yes."—Druce.

Sedum dasyphyllum L. Old walls, Long Sutton, Somerset, v.-c. 5, June 20, 1924.—H. Downes. "Yes."—Druce.

Callitriche angustifolia Hoppe, var. *tenuifolia* Persoon. Strontia pit, North Mead, Yate, W. Gloster, v.-c. 34, June 25, 1924. The plant was entirely submerged in clear water and fruiting freely. Mr Arthur Bennett kindly named it as above and writes—"It is the *C. tenuifolia* Persoon (1805), but that is now considered a variety of *C. hamulata* Kütz. = *C. intermedia* Hoff. 1791 by many. But it seems the true name for it is *C. angustifolia* Hoppe Tasch iii., 160 (1792), var. *tenuifolia* Persoon (1805). It has been named *C. autumnalis* Godron Fl. Lorraine i., 244 (1843). *C. autumnalis* Kütz Linnea vii., 186, *C. hamulata* Kütz. var. *homoiophylla* Godron in Grenier and Godron Fl. France, i., 591 (1848). Some German authors consider *C. angustifolia* Hoppe as a variety of *verna* and Hegelmeier in his Monograph of the genus (1864) seems so to consider it."—I. M. Roper. "Rightly named and well displayed. This plant often causes difficulty to those who use Babington's *Manual* as its leaves are distinctly wider at the base, and it rarely produces the uppermost leaves of different shape. As usually found, therefore, its leaves are uniform, and it apparently belongs to that. It differs from *C. autumnalis* in being much lighter in colour, with longer and narrower leaves. Its fruits are much smaller than in that species, but difficult to examine in dried and pressed specimens. When fresh the mature fruits of *C. autumnalis* are easily recognised, the four lobes standing well apart, but when dried they should be examined under the microscope, and will show a broad, semi-transparent wing to each lobe. This wing is absent in the plant under notice."—Pearsall. "*C. angustifolia* in Bot. Taschenb. (1792), p. 155, was referred by Koch to *C. hamulata* Kütz as a form with leaves wholly linear; by Beck, Rouy and Vollmann placed to *C. verna* L.; and regarded by Grenier and Godron as synonymous with their var. *homoiophylla* of *C. hamulata* Kütz. Miss Roper's plant seems to possess the leaf and fruit characters of *C. hamulata* Kütz. The leaves are 2 or more cm. long and .5 mm. wide, markedly pincer-shaped at the summit. Of the many named forms it seems to me to agree very well with *C. hamulata* Kütz. var. *trichophylla* Kütz."— C. E. Britton. "A very interesting form." —Druce.

Epilobium tetragonum Curt. Open woodland on high ground above Tickenham, N. Somerset, v.-c. 6, July 15, 1924.—J. W. White.

Epilobium lanceolatum Seb. & Maur. Garden weed, Polperro, E. Cornwall, v.-c. 2, September 1, 1924.—F. Rilstone.

Danaa cornubiensis Burnat. St Pinnock, E. Cornwall, v.-c. 2, July 5, 1924.—H. J. Riddelsdell.

Sison Amomum L. Birdingbury, near Rugby, Warwick, v.-c. 38, August 25, 1924.—L. Cumming. Thicket near Caponhurst Station, Cheshire, v.-c. 58, September 3, 1924.—C. Waterfall.

Pimpinella Saxifraga L. Birdingbury, near Rugby, Warwick, v.-c. 38, August 25, 1924.—L. Cumming. "Yes, the var. *poteriifolia* Wallr."—Druce.

Chaerophyllum aureum L. Fruiting specimens from Callander, W. Perth, v.-c. 87, August 1924.—G. C. Druce.

Foeniculum vulgare Mill. Waste ground off Lealand Road, Chester, v.-c. 58, August 4, 1923.—C. Waterfall.

Aethusa Cynapium L. [Ref. No. 2216.] Large form (up to 5 feet in height), garden by "Distillery Road," Colchester, N. Essex, v.-c. 19, September 28, 1924. Pointed out to Mr T. J. Foggitt and myself by Dr A. H. Evans, who considers it a distinct and constant variety, larger in all its parts than the type. I can trace no description answering to it.—G. C. Brown. "This is the var. *hortensis* Boenn. Prod. Fl. Monast. 84. See *Fl. Berkshire* 248. In its extreme state it is the *Ae. elata* Friedl. which is sometimes a yard or more high."—Druce.

Silaus flavescens Bernh. Birdingbury Station, Warwick, v.-c. 38, August 1924.—L. Cumming. "Now to be known as *Silaus Silaus* (L.)."—Druce.

Anthriscus vulgaris Bernh. Birdingbury, near Rugby, Warwick, v.-c. 38, August 25, 1924.—L. Cumming. "A slip for *Caucalis Anthriscus* Huds."—Druce.

Caucalis nodosa Scop. Hedge bank between St Mawes and St Just in Riseland, W. Cornwall, v.-c. 1, June 23, 1924.—C. Waterfall.

Caucalis nodosa Scop., var. *pedunculata* Dr. Field, Llysfaen, Old Colwyn, Denbigh, v.-c. 50, August 13, 1924.—A. Wilkinson. "Yes, but not extreme examples."—Druce.

Adoxa Moschatellina L. Hedge banks and thickets near Puddington Wood, Shotwick, Cheshire, v.-c. 58, May 30, 1924.—C. Waterfall.

Sambucus nigra L., green-fruited variety. Two forms—A. and B. A with smaller leaflets, smaller fruit and usually smaller cymes: ripens later than B. This may be simply due to the shrub being older and less vigorous. Two trees growing side by side in wild shrubbery at Bloxham, Oxon, v.-c. 23, September 1924.—H. J. Riddelsdell. "Should refer these to *S. nigra* L., var. *virescens* Desf."—Britton.

Sambucus nigra L., var. *laciniata* L. Hedgerow near Falmouth, W. Cornwall, v.-c. 1, June 21, 1924.—C. Waterfall.

Sambucus Ebulus L. Plantation between Leyburn and L. Shawl, Yoredale, N.W. Yorks, July 1920.—C. WATERFALL.

Galium Mollugo L., var. *Bakeri* Syme. Cornfield near Crickley, E. Gloster, v.-c. 33: also by roadside a short distance away. August 3, 1924.—H. J. RIDDELSDELL. "Syme says of *Mollugo*, sub-sp. *elatum*, 'Panicle broad, divaricate in fruit,' and of *erectum*, 'Panicle slender, with all the branches ascending in fruit.' I cannot make this plant fit with the former description. As Syme says, *Bakeri* is one of the three or four of the intermediate forms which connect *erectum* with *elatum*. Baker (*Journ. Bot.* 291, 1863) says his plant had leaves on the primary stem 7-8 in a whorl. In this they are but 6. On the whole it seems better placed under *erectum* than under *elatum*. I should put *Bakeri* itself under *erectum*."—DRUCE. "Apparently a luxuriant growth of *G. erectum* Huds. The erect direction of the pedicels (which are mostly devoid of either flowers or fruits), together with the narrow foliage, indicate this species rather than *G. Mollugo*. Judging by cultivated specimens of Syme's variety, distributed by Baker, the latter plant belongs to *G. erectum* from which it cannot be distinguished by any character of value."—BRITTON.

Galium erectum × *verum*. Wood Walton, Hunts, v.-c. 31, ex Hort. Oxon, August 1924.—G. C. DRUCE.

Galium erectum Huds. [Ref. No. 2646.] Woldingham, Surrey, v.-c. 17, June 15, 1924.—A. BEADELL & C. E. BRITTON.

Galium ——. [Ref. No. BB.331.] Frilford, Berks, v.-c. 22, July 1924.—G. C. DRUCE. "The strict habit, narrow foliage, length of pedicels, and comparatively large flowers, show this to be *G. erectum* Huds."—BRITTON.

Galium palustre L., var. *elongatum* Presl. Lane north of Horsell Common, Woking, Surrey, v.-c. 17, September 24, 1924.—W. BIDDISCOMBE. "The character assigned by the author is 'caule erecto elongato tetragono laevissimo;' under the lens there are but few asperities, but the stem does feel somewhat rough when the finger is drawn up it. Our common plant is *lanceolatum* Uechtr. This seems to be an approach to the true *elongatum*."—DRUCE.

Asperula odorata L. Blue-bell wood near Prestatyn, Flintshire, v.-c. 51, May 24, 1924.—C. WATERFALL.

Valeriana officinalis L., var. *Mikanii* Syme. Limestone slope by the Avon below Bristol, N. Somerset, v.-c. 6, July 2, 1924.—J. W. WHITE. "Is not *Mikanii* Syme typical *officinalis*?"—DRUCE.

Valerianella olitoria Poll. St Ouen, Jersey, May 16, 1924.—L. Cumming. "Yes; the var. *lasiocarpa* Reichb."—Druce.

Valierianella carinata Lois. St Ouen, Jersey, May 16, 1924.—L. Cumming.

Dipsacus pilosus L. Chedworth, Gloster, v.-c. 33. August 24, 1924.—Coll. C. A. Cook; comm. W. Biddiscombe.

Scabiosa arvensis L., var. Small heads, smaller florets, of darker blue; greyer foliage. One or two plants only, growing with *S. arvensis*, Colesborne, E. Gloster, v.-c. 33, August 4, 1924.—H. J. Riddelsdell.

Erigeron acris L. Lysfaen quarry, Old Colwyn, Denbigh, v.-c. 50, August 9, 1924.—A. Wilkinson.

Erigeron mucronatus DC. Old wall about 4 miles out of Peter Port, Guernsey, July 1924.—Fred Robinson. "Yes; it is now described as *E. Karowinskianus* DC., var. *mucronatus*."—Druce.

Gnaphalium luteo-album L. Thompson, Norfolk, v.-c. 28, August 7, 1920.—Coll. Miss M. Cobbe; comm. F. Rilstone.

Inula viscosa L. Cardiff Docks, Glamorgan, v.-c. 41. September 1924.—R. L. Smith. "Yes; a beautiful plant as it appeared at Cardiff last October."—Druce.

Achillea nobilis L. Waste ground, Barry, Glamorgan, v.-c. 41, July 13, 1924.—R. Melvill. "Yes."—Druce. "This alien has occurred at intervals over a long period about the rubbish tips of Bristol."—I. M. Roper. "The leaves of this lack the dentate rachis characteristic of *A. nobilis* L."—Britton.

Anthemis ?. St Ouen's Bay, Jersey, July 1924. Flowers deep yellow, and *Buphthalmum* same place and date.—F. Robinson. "Is not Mr Robinson in error in thinking that he gathered these Composites in Jersey? Did he not get them near Lancresse, i.e., Fort Doyle, in Guernsey? I have had specimens sent me several times from the Guernsey locality, but have never seen it in Jersey. It is not an *Anthemis* or *Buphthalmum*, but the South American species *Spilanthes decumbens* (Sm.) Moore, var. *leptophylla* DC."—Druce.

Senecio aquaticus Hill, var. *ornatus* Druce. Near Loch Spiggie, Zetland, August 1924.—G. C. Druce.

Senecio viscosus L. Corbière, Jersey, May 20, 1924.—L. CUMMING. "No, this is *S. sylvaticus* L."—DRUCE.

Arctium minus Bernh. Open woodland on the Cadbury ridge above Tickenham, N. Somerset, v.-c. 6, July 21, 1924. I have named this with some doubt as in certain respects it seems to agree with *A. intermedium* Lange=*A. vulgare* Evans. But the heads are not large enough for the latter nor are they sub-corymbose.—J. W. WHITE.

Carduus nutans L., var. *macrocephalus* Desf. Waste ground, St Philip's Marsh, Bristol, W. Gloster, v.-c. 34, July 29, 1924. Known there since 1909.—I. M. ROPER. "Yes."—DRUCE.

Centaurea Jacea L., sub-sp. *angustifolia* Gugl., var. *pseudofimbriata* Gugler. [Ref. Nos. 2724, 2728.] Hort. West Barnes, Merton, Surrey, v.-c. 17. The latter was grown from a plant transferred from Epsom Downs, Surrey.—C. E. BRITTON.

Centaurea Scabiosa L. Crickley Hill and Hilcot, E. Gloster, v.-c. 33, August 1924. I distributed a peculiar form in 1912 from Crickley Hill, which C. E. Britton has since described and named var. *Riddelsdellii*. It was rayless and had small anthodes. There was only one plant so far as I saw. This year I looked for it again without success, a fact which seems to imply that it was only an aberrant form. But in these parts of E. Gloster *C. Scabiosa* varies continually and greatly in the presence and number of ray florets and to some extent in the size of the anthode. The present gatherings illustrate the point, and are sent in support of my idea that var. *Riddelsdellii* is really only a temporary aberration, or else an individual sport. Heads rayed and rayless sometimes grow from the same root.—H. J. RIDDELSDELL. "*Centaurea Scabiosa* L., var. *discoidea* Vechtr."—BRITTON.

Centaurea Solstitialis L. Waste ground, altitude 300 feet, Bradford, S.-W. Yorks, v.-c. 63, September 8, 1923.—J. CRYER. Ware Park brickfield, Herts, v.-c. 20, September 6, 1924.—Coll. D. M. HEATH: comm. F. ROBINSON.

Centaurea aspera L. St Ouen's Bay, Jersey, July 1924.—F. ROBINSON.

Centaurea nemoralis Jord., var. *subintigra* C. E. Britton, f *radiata* C. E. Britton. Rocky hillside, Polperro, E. Cornwall, v.-c. 2, September 2, 1924.—F. RILSTONE.

Centaurea pratensis Thuill. [Ref. No. 2715.] Hort. West Barnes, Merton, Surrey, August 22, 1924. Grown from a root sent to me by Mr W. C. Barton from St Ouen's Bay, Jersey, in 1923.—C. E. BRITTON.

×*Centaurea Moncktonii* C. E. Britton. Grown from plant procured from Epsom Downs, Surrey. The fruits are naked or pappose. (See *Rep. B.E.C.* 172, 1920).—C. E. BRITTON.

Crepis paludosa Moench. Rainsough Clough, Prestwich, Lancs, v.-c. 52, June 1924.—D. P. MURRAY.

Hieracium Peleterianum Mér. Cliff top, Daddyhole Plain, Torquay, S. Devon, v.-c. 3.—C. WATERFALL. " Correctly named."—CRYER.

Hieracium crebidens Dahlst. Chapel-le-Dale on carboniferous limestone, at 800 feet, Mid-West Yorks, v.-c. 64, July 12, 1924.—J. CRYER.

Hieracium umbellatum Sm. Old pit heaps, Midsomer Norton, Somerset, v.-c. 6 (Bristol coalfield), abundant, July 1924.—H. DOWNES. " Evidently a mistake for *H. maculatum* Sm."—CRYER. " *H. maculatum* Sm.; probably only a slip of the pen here."—RIDDELSDELL.

Hieracium boreale Fr., forma. [Ref. No. 2195.] Dry ground, Berechurch, N. Essex, v.-c. 19, September 14, 1924. A tall, strong, much-branched form with dark heads and rather too much tomentum on stem and leaves to be typical, I think.—G. C. BROWN. " *H. sabaudum* L., group *virgultorum* Jord."—CRYER.

Hieracium umbellatum L. Rocky roadside between Helsby and Alvanley, and waste grassy ground near Helsby Station, Cheshire, v.-c. 58, September 8, 1923.—C. WATERFALL. " Yes, and near var. *linariifolium* Wallr."—CRYER.

Hypochaeris glabra L., Corbière, Jersey, May 12, 1924.—L. CUMMING.

Hemizonia pungens Torrey & Gray. Waste ground by maltings, Hythe quay, Colchester, N. Essex, v.-c. 19, July and August 1924.—G. C. BROWN. " Yes, the Californian *H. pungens*, which was in plenty at Colchester last October."—Druce.

Jasione montana L. Corbière, Jersey, May 20, 1924.—L. CUMMING.

Cervicina hederacea Druce. Field by stream, Bettws-y-Coed, Denbigh, v.-c. 50, August 8, 1924.—A. WILKINSON.

Phyteuma orbiculare L. Downs near Eastbourne, Sussex, July 1924.—D. P. MURRAY.

Daboecia cantabrica R. & B. Heaths near Barna, Co. Galway, Ireland, August 1923.—D. P. MURRAY.

Pyrola rotundifolia L., var. *maritima* Kenyon. In hollows of sandhills between Birkdale and Ainsdale, near Southport, Lancs, v.-c. 58, June 30, 1923.—RUTH BRIGHT. Sand dunes, near Freshfield, Lancs, v.-c. 58, September 18, 1923.—C. WATERFALL.

Pyrola rotundifolia L., var. *arenaria* Koch. Sand hills, Birkdale, Lancs, v.-c. 58, August 1924.—D. P. MURRAY. "*Maritima* and *arenaria* are synonymous."—DRUCE.

Limonium Limonium (L.) Dr. Hayling Island, S. Hants, v.-c. 11, September 1922.—G. C. DRUCE.

Steironema ciliatum Rafin. By the Leader near Earlston and plentiful by Tweedside, Berwick, v.-c. 81, October 8, 1924.—I. M. HAYWARD. "Yes."—DRUCE.

Anagallis arvensis L., var. *carnea* Schrank. Dry sandy hillside above Carthillian Cove, W. Cornwall, v.-c. 1, June 30, 1924. —C. WATERFALL. "Yes."—DRUCE.

Centaurium Centaurium (L.) Dr., var. (vel. forma) *ellipticum* Dr. Quenvais, Jersey, July 1924.—G. C. DRUCE.

Centaurium umbellatum Gilib., var. *capitatum* Koch. Grassy cliff slopes above Mullion Cove, W. Cornwall, v.-c. 1, June 28, 1924, and rocky ground across the stream above Carthillian Cove, June 30, 1924.—C. WATERFALL. "This has the stamens free only from the top of the tube, therefore not *C. capitatum* Willd., nor is it Koch's variety of *E. Centaurium* which should have a very dense inflorescence. I call it a dwarf form of *Centaurium Centaurium* L."—DRUCE. "*E. Centaurium*, var. *capitata* Koch. I believe."—SALMON.

Symphytum officinale × *peregrinum* (? × *S. lilacinum* Buckn.). Sewage Farm, Hitchin, Herts v.-c. 20, July 29, 1924.—J. E. LITTLE. "It is a good specimen and on comparing it with my own it seems to be this hybrid. The upper leaves are strongly decurrent and the loose leaf is of right shape. Bucknall's description lays stress on the colour of the buds and expanded flowers, and these characters are of course lost on drying. I remember it to be quite a striking looking plant when growing."—WHITE.

Symphytum grandiflorum DC. (*S. ibericum* Stev.). Cultivated in the University Garden, Bristol, May 1924. De Candolle's name is curiously inappropriate to a plant with flowers so little conspicuous. In his description the corolla length is given at 18 to 20 mm., a measurement corresponding to that of the Bristol plant. On account of its decumbent habit and sparingly produced flowering stems—usually less than a foot high—this species takes a humble place among many robust and handsome relatives.—J. W. White.

Anchusa sempervirens L. Hedges at West Monkton, Taunton, S. Somerset, v.-c. 5, June 1, 1924.—H. Downes.

Mertensia maritima Gray. Ura Firth, Shetland, August 6, 1924.—R. J. Burdon.

Myosotis palustris Hill, var. *strigulosa* (Reichb.). Loch side, Huesbreek, Zetland, August 1924.—G. C. Druce.

Myosotis sylvatica Hoffm. In woods, Botley Hill, Limpsfield, Surrey, v.-c. 17, May 18, 1924. Plentiful over a considerable area of the woods on the chalk hills above Titsy Park, and being gathered by the public in considerable quantity. It thrives best in the lightly shaded parts.—J. Fraser.

Myosotis collina Hoffm. Corbière, Jersey, May 15, 1924.—L. Cumming.

Myosotis versicolor Sm., var. *pallida* Bréb. Sandy seashores, Mudeford, S. Hants, v.-c. 11, April 21, 1924.—J. Cryer.

Myosotis. [Ref. No. AA.879.] Marsh, St Peter's, Jersey, July 1924.—G. C. Druce.

Lithospermum purpureo-caeruleum L. Limestone cliffs, Fontygary, Glamorgan, v.-c. 41, May 18, 1924. This beautiful plant occurs in several spots along the coast of Glamorgan, usually on bushy ledges along the limestone cliffs. The flower is a deep, vivid blue and makes a fine splash of colour in its natural surroundings, though it fades to a dull blue on drying.—R. Melvill. Aller Wood, Langport, Somerset, v.-c. ~~5~~ 6, June 10, 1924.—H. Downes

Linaria spuria Mill. Cultivated field on chalky soil, Harefield, Middlesex, v.-c. 21, September 16, 1922.—Coll. J. E. Cooper; comm. G. C. Brown.

Linaria Cymbalaria Mill., white variety. On canal wall, Bolton-le-sands, near Carnforth, Lancs, v.-c. 69, April 23, 1923.—Ruth Bright.

Linaria pallida Ten. Seashore, Bardsea, N. Lancs, v.-c. 69. June 16, 1924.—D. LUMB. Comm. et det. G. C. DRUCE. See *Rep. B.E.C.* 447, 1924.

Euphrasia stricta Host. [Ref. No. 2776A.] Holland, S Ronaldshay, Orkney, v.-c. 111, August 29, 1924. Native, common, plants in full flower and in unripe fruit. Leaves 2-10, toothed; corolla large, with a pale lilac upper lip, and white lower lip, with dark purple lines on both lips, and a yellow spot on middle of middle lobe of lower lip.—H. H. JOHNSTON. " These are very unusual plants indeed. The late Mr Bucknall named them and I agreed because no other name would fit them. The bracts' teeth are long and narrow, but not in the same way as are those of passable *stricta*. The flowers of *stricta* are possibly always smaller than these."—Lumb. " I think there can be no doubt as to this name. The long, transparent—and often forked—awns of the bracts are in themselves almost conclusive."—PEARSALL. " *E. stricta*."—DRABBLE.

Euphrasia borealis Towns. Upland pasture near Tickenham, N. Somerset, July 17, 1924. A rather slender form, perhaps, but more robust than a plant from Wotton-under-Edge (1899) named *borealis* by Towsend.—J. W. WHITE. " Very unusual plants. Calyx-teeth and capsule not at all like those of *borealis*. The capsule is a *curta* one and I have no doubt that the plants are robust *curta*, var. *glabrescens*."—LUMB. " Yes, *borealis*, but much smaller than the Derbyshire plants, which have much larger leaves."—DRABBLE. " Very good examples of *E. borealis*."—PEARSALL.

Euphrasia borealis Wettst. Whiteness, Zetland, v.-c. 112, August 1924.—G. C. DRUCE. " Yes; large flowered, as is often the case in these northern plants."—DRABBLE. " Good examples of *E. borealis*."—PEARSALL.

Euphrasia. Dry rocky mound near Daddyhole Plain, Torquay, S. Devon, v.-c. 3, June 14, 1924.—C. WATERFALL. " *E. borealis* bearing a remarkable resemblance to the Orkney and Shetland plant."—D. LUMB. " Too mouldy for determination."—DRABBLE. " My sheet contains two damaged specimens of nearly glabrous plants which I take to be *E. nemorosa*."—PEARSALL.

Euphrasia brevipila Burnat & Gremli. [Ref. No. 2776.] Holland, South Ronaldshay, Orkney, v.-c. 111, August 29, 1924. Native, common. Plants in flower and fruit. Leaves 2-10 toothed; corolla large, with a pale lilac upper lip, and white lower lip, with dark purple lines on both lips, and a yellow spot on middle of middle lobe of lower lip.—H. H. Johnston. "Many plants eglandular; unusual *brevipila.*"—Lumb. "Notwithstanding the superficial resemblance of these plants to *E. borealis*, and the fact that we have seen undoubted specimens of that species with a few short glandular hairs, I consider these plants correctly named. Of the three plants on my sheet, one (branched) is eglandular, another (simple) has a few short, glandular hairs, and a smaller (simple) plant shows numerous, similar hairs. There are no flowers, and the printed description of the corolla might apply equally to either species."—Pearsall. "Yes; *brevipila* in spite of the absence of glands on my specimens."—Drabble.

Euphrasia. Cliff top, Daddy Hole Plain, Torquay, S. Devon, v.-c. 3, June 14, 1924.—C. Waterfall. "Another inadequate sheet. Two poor specimens of *E. nemorosa.*"—Pearsall. "*E. nemorosa*, var. *ciliata* Drabble."—Lumb. "There seems to be some admixture here, my sheet has very poor specimens of *E. brevipila.*"—Drabble.

Euphrasia occidentalis Wetts. Dry bank on cliff top, near Mullion Cove Hotel, W. Cornwall, v.-c. 1, July 1, 1924.—C. Waterfall. "Yes; with very unusual features, the glandular hairs are extremely numerous and they occur on the stems as well as on the bracts and calyx."—Lumb. "Yes; the short glandular hairs are not numerous, but well shown on the upper calyx teeth."—Pearsall. "Yes, but very sparsely glandular."—Drabble.

Euphrasia. Downs above Kynance Cove, W. Cornwall, v.-c. 1, July 2, 1924.—C. Waterfall. "*E. brevipila* Burn."—Lumb. "*E. occidentalis.*" Drabble. "I believe this to be a shade-grown form of *E. occidentalis.* The light green colour and laxer habit are, however, unusual. The glandular hairs are not those of *brevipila* and the flowers are much too small for that species. There are no glandular hairs on the stem, very few on the bracts, but the calyx teeth are fairly well supplied with them."—Pearsall.

Euphrasia Rostkoviana Hayne. [Ref. No. 599.] Kittow's Moor, near Treneglos, N. Cornwall, v.-c. 2, August 28, 1924. September 14, 1924.—J. E. Little. "Very typical examples of the normal branching of *E. Rostkoviana.*"—Pearsall. "Yes."—Lumb. Wilsey Down, N. Cornwall, v.-c. 2, August 28, 1924 [Ref. No. 601], Wilsey Down and Kittow's Moor are adjacent. Those on the latter [599] were rather larger flowered.—J. E. Little. "Yes; rightly named."—Pearsall. "Yes; small *Rostkoviana.*" Drabble. "Yes."—Lumb. Meadow between Torpantau and the Brecon Beacons, v.-c. 42, September 1924. [Ref. No. 24.2.]—Coll. A. E. Wade; comm. National Museum of Wales. "Yes."

—DRABBLE. " Yes; this very long and unbranched form is quite common in damp meadows."—PEARSALL. " Yes."—LUMB.

Euphrasia. [Ref. No. 24.3.] Slopes of Craig-fan-ddu, 1750 feet, Brecon, v.-c. 42, September 1924.—Coll. A. E. WADE; comm. NATIONAL MUSEUM OF WALES. " Unusual *E. Rostkoviana.*"—LUMB. " Small *E. Rostkoviana.* Two of my specimens seem to be quite eglandular but I cannot separate them from the rest by any other feature."—DRABBLE. " Stem, leaves, bracts and calyx teeth with abundant long, glandular hairs. Dwarf, sub-alpine form of *E. Rostkoviana.*' —PEARSALL.

Euphrasia Kerneri Wettst. [Ref. No. 2192.] Limestone cliffs, Avon Gorge, Clifton, Bristol, W. Gloster, v.-c. 34, July 19, 1924.—Coll. A. E. WADE & G. C. BROWN; comm. G. C. BROWN. " So I should name these plants."—PEARSALL. " Yes."—LUMB.

Euphrasia minima Jacq. [Ref. No. 2778.] Moist peaty heath, Gairyhill, S. Ronaldshay, Orkney, v.-c. 111, August 29, 1924. Plants in full flower and sparingly in unripe fruit. Leaves 2-6 toothed. Corolla small, with a light purple upper lip and white lower lip, with dark purple lines on both lips, and a yellow spot on middle lobe of lower lip.—H. H. JOHNSTON. " Yes; better than our Lake District plants."—LUMB. " Yes; very characteristic."—PEARSALL.

Rhinanthus stenophyllus Schur. ? Roadside near East Taphouse, E. Cornwall, v.-c. 2; July 5, 1924.—F. RILSTONE. " Yes; I believe correctly named."—SALMON.

Melampyrum cristatum L. Twin Wood, Bedford, v.-c. 30, August 1924. This has increased in quantity since I gathered it here over 20 years ago.—H. J. RIDDELSDELL.

Orobanche purpurea Jacq. Tenby, Pembroke, v.-c. 45, July 1924.—Coll. J. E. ARNETT; comm. NATIONAL MUSEUM OF WALES. Jersey, June 1924.—F. ROBINSON.

× *Mentha pubescens* Willd., ? var. *palustris* Sole. Ditch side, Drigg, Cumberland, September 1924.—Coll. R. H. WILLIAMSON; comm. G. C. DRUCE. " I would prefer to name this var. *hircina* Hull because the leaves are lanceolate, green and sub-glabrous above, hairy beneath. It varies greatly under cultivation. Sometimes the leaves are long and narrow, sometimes short and relatively broad. The lowest verticillaster sometimes lengthens into a spike with or without a pair of small leaves on its stalk."—FRASER.

Mentha sativa L., var. *acutifolia* Sm. [Ref. No. 4A Medway.] Cultivated at Kew, from Nettlestead, Medway Valley, W. Kent, v.-c. 16, August 20, 1924. I have a series of forms from the Medway Valley all varying around Smith's species. It would have been more correct, perhaps, to have written the name *Mentha verticillata* L., var. *acutifolia* Sm. The late John Gilbert Baker and Jean Briquet of Geneva both pointed out that Linnaeus first used the name *M. verticillata* for the hybrid *M. aquatica* × *arvensis* and afterwards forgot about it, using *M. sativa* instead. Smith described *M. acutifolia* as a species; and Jean Briquet described it as a sub-species.—J. Fraser. "Smith's figure of *M. acutifolia* (*E.B.*, 2415) shows the leaves subtending the whorls narrower and with a longer and more acute apex ('ovate-lanceolate') than those in the example which has reached me: moreover, in this the whorls are stalked. Smith says 'whorls are all quite sessile.' Cultivation, however, may have altered Mr Fraser's plant."—Salmon.

Mentha arvensis L., var. *Allionii* Bor. Cog Mill, Frampton Cotterel, W. Gloster, v.-c. 34, August 12, 1924.—I. M. Roper. "A form of *M. arvensis* L., var. *Allionii* Bor. It differs from the more typical form by having somewhat longer, more acute calyx teeth, and a rather more hairy calyx. Boreau made it a species so that it could be named *M. arvensis* L., var. *Allionii* Briquet, forma."—Fraser.

Thymus glaber L. Chalk rubble, Oxford, v.-c. 23, July 1903.—G. C. Druce.

Calamintha Acinos Clairv. Wellow, N. Somerset, v.-c. 6, July 1924.—H. Downes.

Satureia adscendens (Jord.). Near Abingdon, Berks, v.-c. 22, August 1903.—G. C. Druce.

Melittis Melissophyllum L. Quantity in the Looe Valley, E. Cornwall, v.-c. 2, July 1, 1924.—H. J. Riddelsdell.

Stachys alpina L. Outskirts of woodland near Wotton-under-Edge, W. Gloster, July 12, 1923.—J. W. White.

Stachys ? ambigua Sm. Looe, E. Cornwall, v.-c. 2, July 18, 1924.—H. J. Riddelsdell. "The leaves are not broad enough for Smith's *ambigua* (see *E.B.* plate), but it is doubtless *S. palustris* × *sylvatica*."—Druce. "Certainly *S. palustris* × *sylvatica* which in this country is usually designated *S. ambigua* Sm., but it may be allowable, perhaps, to mention that the latter name denotes but one particular form of the hybrid, there being several other names in existence that do not exactly connote the form distinguished by Smith."—BRITTON. "This is *S. sylvatica* × *palustris* and agrees better with Smith's description and plate of his *ambigua* (*E.B.* 2089) than one often sees. The commoner form of this hybrid is nearer *palustris;* Smith's plant was more on the *sylvatica* side. *E.B.* 2089 is figured from an Orkney example and a specimen from Stromness (coll. F. C. Crawford, 1899) in my herbarium matches Mr Riddelsdell's plant uncommonly well."—SALMON.

Galeopsis Tetrahit L., var. *nigricans* Bréb. Foxcover, Bloxham, Oxon, v.-c. 23, in quantity, August 23, 1924. A, flowers small, creamy white; calyx teeth darkening in fruit; B, flowers small, purple; lower lips marked with yellow; calyx teeth blackening.—H. J. RIDDELSDELL.

Leonurus Cardiaca L. Footpath to sea, Lysfaen, Old Colwyn, Denbigh, v.-c. 50, August 13, 1924.—A. WILKINSON.

Lamium hybridum Vill. Welshman's Croft, Hitchin, Herts, v.-c. 20, April 12, 1924. I send this because there was distributed last year as "*L. hybridum*, var. *incisum*," a plant which appeared to me to come under *L. purpureum.*—J. E. LITTLE.

Lamium Galeobdolon Crantz. Waste spots, The Coombes, near Bolesworth Castle, Tarporley, Cheshire, May 16, 1923.—C. WATERFALL.

Plantago ramosa Asch. Cardiff Docks, Glamorgan, v.-c. 41, September 1924.—R. L. SMITH. "Yes; but the older name is *P. indica* L."—DRUCE.

Plantago. [Ref. No. BB.905.] Top of Rands Hill, Zetland, August 1924. Perhaps better put under *P. Edmondstonii* than under *maritima.* It is in part the var. *minor* of the latter.—G. C. DRUCE.

Herniaria ciliata Bab. Dry sandy hillside above Carthillian Cove, W. Cornwall, v.-c. 1, June 3, 1924.—C. WATERFALL.

Atriplex ? angustifolia Sm. Bloxham, Oxon, v.-c. 23, August 30, 1924. Too young for certainty, I suppose.—H. J. RIDDELSDELL. "*A. angustifolia*, why not?"—DRUCE. "I should name this *A. patula* L., var. *linearis* Moss & Wilmott in Camb. Brit. Fl. ii., 173."—BRITTON.

Polygonum amphibium L. Pool by Yate Court, W. Gloster, v.-c. 34, June 25, 1924. Floating in deep water and yet developing long, fibrous roots at every node. The spike, too, is branched and not solitary.—I. M. Roper.

Rumex pulcher L. Roadside about Falmouth, W. Cornwall, v.-c. 1, June 25, 1924.—C. Waterfall.

Hippophae Rhamnoides L. Shrubs on roadside between the dunes and Freshfield, S. Lancs, v.-c. 59, September 18, 1923.—C. Waterfall.

Euphorbia hyberna L. Portreath, Cornwall, v.-c. 1, June 1924. This plant is now thoroughly established here and is not likely to become extinct. When these specimens were gathered I saw some hundreds of plants spread over a distance of nearly 100 yards, and most of them looked likely to produce good fruit. This plant still thrives at its other English station, The Lyn Valley, N. Devon.—R. L. Smith.

Euphorbia virgata W. & K. [Ref. No. 2695.] Banstead Downs, Surrey, v.-c. 17, August 10, 1924. Established for several years past in this locality. Two forms occur, one with primary bracts broadly linear, the second with broadly ovate or elliptical-oblong primary bracts.—C. E. Britton. Cornfield, Burford, Oxon, v.-c. 23, June 1924.—G. C. Druce.

Ulmus nitens (?×) [Ref. No. 544.] Near Oughton Head, Hitchin, Herts, v.-c., 20, May 27 and August 14, 1924. A tree of about 35 feet with short bole (8 feet), and pendulous, whip-like branchlets.—J. E. Little. "I make this to be *U. major* Sm. There were few good or characteristic leaves on the piece, and they were too broad for *U. nitens* Moench. The samarae were also those of *U. major*. This elm may well be *U. montana* × *nitens*."—Fraser.

Carpinus Betula L. Roadside near Milbury Heath, W. Gloster, April 9 and May 7, 1913.—C. Bucknall & J. W. White. "Correctly named; the male catkins are most conspicuous just before they shed their pollen."—Fraser.

Fagus sylvatica L., cotyledons. Woods, etc., near Mouldsworth Station, Cheshire, v.-c. 58, June 30, 1923, and rubbish heaps on roadside between Rossett and Marford, Denbigh, v.-c. 50, July 21 1923.—C. Waterfall.

Salix fragilis L. ♂. [Ref. No. 589.] College farm, Pegsdon, Beds, v.-c. 30, May 28 and August 19, 1924. I was just too late to procure flowers. From an examination of catkins on the ground I found:—Stamens 2; filaments hairy at base; nectaries 2, one within, one without the filament and ± quadrate. A large tree, 50 feet, with widespreading branches and deeply fissured bark, forked from near the base into two main branches. Twigs fragile at base Some of the leaves are very broad, much exceeding usual measurements. I queried var. *latifolia* of Camb. Brit. Flora, figure and description, but Mr Linton replies—" *S. fragilis*: I do not know var. *latifolia*."—J. E. LITTLE. " The leaves of this are abnormal, and every one on my specimen had lost its apex. However, I conclude that it is *S. fragilis* from the irregularity of the serratures. I have measured leaves of a tree of *S. fragilis* that had been cut down, and had grown up again, 10 x 3 ins. There is the debated question of *S. fragilis*, var. *latifolia*, but I have several broad-leaved trees under observation to ascertain if size is constant. *S. fragilis* × *triandra* also gives abnormally large leaves when lopped or broken down by the wind, but the serratures of this are practically regular."—FRASER. " I suppose these leaves are correctly named, but mine present several unusual features. They are not cuneate at the base but only slightly narrowed there and markedly rounded. The width of the leaves, too, is quite exceptional—the widest is 4.5 cm. Anderson's var. *latifolia* is given as 2.5-3.0 cm., but most of my leaves much exceed this—five of my nine leaves are over 4.0 cm. In my herbarium I have leaves of *S. pentandra* identical in size and shape but with different serration and glandular petioles."—PEARSALL.

S. fragilis × *pentandra* ? ♂. [Ref. No. 556.] Water course, near West Mill, Hitchin, Herts, v.-c. 20, May 31 and October 15, 1923; May 22 and August 14, 1924. For notes see *W.E.C. Report* 1923-24, p. 261.—J. E. LITTLE. " I have always labelled my specimens of this as *S. alba* × *pentandra*, because the unfolding leaves are ± silky. Wimmer says of *S. pentandra* × *fragilis* (*S. cuspidata* Schultz), ' Leaves pale green beneath; even the new ones very glabrous.' A. and E.-G. Camus, Mon. des Saules d'Europe, Atlas, p. 23, f. D. & E. show very much longer ♂ and ♀ catkins than these specimens possess."—FRASER. " These specimens bear a superficial resemblance to some forms of *S. pentandra*, but the texture of the leaves, their cuneate bases and pronounced oblique acumination point to the influence of *S. fragilis*. The catkins, too, are more cylindric than ovate—not broad enough in the middle for *S. pentandra* alone. The bracts are variable, as we should expect in the hybrid. Most are rounded above, but many are sub-acute at the apex, and nearly glabrous there, although thickly hairy below. On the evidence I agree to the naming."—PEARSALL. A specimen submitted to Kew was determined *S. alba* × *pentandra*, confirming Mr Fraser's view.

Salix alba, var. *caerulea* × *fragilis* ♀. [Ref. No. 503.] Little Wymondley, Herts, v.-c. 20, June 11, 1923, and June 3, 1924. For notes see *W.E.C. Report* 1922, p. 224.—J. E. LITTLE. "I agree. The leaves become clavate or denuded at a very early stage, and glaucous beneath. The length of the catkins is a remarkable feature of the specimens."—FRASER. "I consider these beautiful specimens correctly named."—PEARSALL.

Salix triandra × *viminalis*, var. *Trevirani* Sprengel. Pumping Station, Mortlake, Surrey, v.-c. 17. Catkins, April 17; leaves, July 26, 1924. The bush from which the specimens were gathered is a very old one and probably existed there before the pumping station was built. It is now very difficult to get fully developed catkins because they get mostly gathered for palms before the stamens lengthen. The leaves are very much larger than those of the variety *S. hippophaefolia* Thuill. as I have seen living and dried specimens of both forms of the hybrid.—J. FRASER. "I think right."—LINTON. "Beautiful examples of this hybrid."—PEARSALL.

S. purpurea × *viminalis*. ♀. [Ref. No. 502.] Osier Holt, Purwell, Hitchin, Herts, v.-c. 20, April 3 and September 17, 1923. Correction—*Rep. B.E.C.* 1923, p. 405, line 34, should read—"I had distributed this to the Watson Club in 1922, as *S. triandra* × *viminalis* and Mr Linton's remarks applied to the latter naming as originally sent out. But Mr Pugsley and Mr Fraser both thought it *S. purpurea* × *viminalis*, and I accepted this correction, collected again, and sent to the B.E.C. under the corrected name."—J. E. LITTLE.

Salix caprea × *cinerea*. ♂. [Ref. No. 515.] Ippolyts Common, Herts, v.-c. 20, April 14 and July 18, 1924. For notes see *W.E.C. Report* 1923, p. 262. Messrs Linton, Fraser, Pearsall and Pugsley are now in agreement as to the naming.—J. E. LITTLE. "A good intermediate. Usually this hybrid resembles *S. cinerea* more than the other parent. Here we have some of the large crenatures, the dense pubescence of the lower side of the leaves, the nearly glabrous stems and buds of the one year old shoots, and the pointed scales of the catkins of *S. caprea*."—FRASER. "Although this hybrid more often simulates *S. caprea*, these specimens have a greater superficial resemblance to *S. cinerea*. The evidence for *S. caprea* is, however, seen in the lighter colour and less torulose character of the younger branches, the rounder lateral margins and bases of the leaves (soft to the touch below), the acute bracts at the base of the catkins, and the filaments slightly hairy at the base. For *S. cinerea* the more rounded and sub-entire stipules, the more persistent pubescence of the twigs, the rather smaller catkins, and the rounded apex of the bracts at the top of the catkins. Other characters are intermediate, and therefore I accept the name."—PEARSALL.

Salix caprea × *viminalis*. ♀. [Ref. No. 516.] Stratiotes Pond, Ickleford, Herts, v.-c. 20, March 28, October 29, November 2, 1923, May 16, 1924. For notes see *W.E.C. Report* 1921, p. 181, bottom. Messrs Linton and Fraser are now both agreed that the name is *S. caprea* × *viminalis*.—J. E. LITTLE. "I agree. The leaves are not very far advanced, but their dense, silvery pubescence, and conspicuous white nerves are evidence of *S. caprea* as one parent, while *S. viminalis* is unmistakable in any of the hybrids of this group."—FRASER. "I agree."—PEARSALL.

Salix—— × *viminalis*. ♀. [Ref. No. 576.] Planted, sewage farm, Hitchin, Herts, v.-c. 20. Cut down periodically, November 2, 1923, May 16, 1924. Stipules minute, rounded, crenate or elongate, irregular, a few larger, rounded or oblong, none linear. The leaves of November 1923 were grey-green and soft below, not silky. In form they were narrowly lanceolate from a broadly rounded base. Those of 1924 were hardly distinguishable from leaves of *S. viminalis*. The plant seems to correspond to Coll. Leefe No. 26, which is labelled "S. Smithiana, E. Bot., t. 1509, leaves July 1842." The Rev. E. F. Linton wrote—"I cannot say; the stipules are very obscure."—J. E. LITTLE. "The young leaves of this willow and those on the upper part of the summer shoots strongly resembly those of *S. viminalis*. The shape of the stipules, when they are produced, is against this, and indicates hybridity. The specimens come very close to *S. caprea* × *viminalis* f. *denudata* Wimmer, if not identical with it. His description is 'Leaves pale green beneath, lightly pubescent—near Breslau.' The leaves are narrow for this hybrid, but I have *S. caprea* × *viminalis*, var. *mollissima* Sm. from the Highlands, with somewhat narrower leaves than the larger of these specimens. Whether the denudation is constant or not, it is evident it exists in herbaria."—FRASER. "I think this is a rather unusual form of the variable *S. caprea* × *viminalis* Wimmer. The leaf surfaces show much more evidence of *S. viminalis* than is commonly the case."—PEARSALL.

Salix aurita × *caprea*. ♂. [Ref. No. 586.] Folly Alder Swamp, Hitchin, Herts, v.-c. 20, August 4, 1922, March 16, 1923, March 29, 1924, June 28, 1924. Confirmed E. F. Linton.—J. E. LITTLE. "The male plant conforms to the character of the hybrid. Some of the uppermost leaves are larger than I generally find them, particularly in breadth, but most of them are quite normal."—FRASER.

Salix aurita × *caprea*. ♀. [Ref. No. 580 B.E.C.] Folly Alder Swamp, Hitchin, Herts, v.-c. 20, March 29, July 6, 1924.—J. E. Little. "I agree. The shape of the leaves and the large serratures of a few of them are evidence of *S. caprea*. The small serratures of most of the leaves, the thin pubescence, ± glabrescent towards September, the small size of the catkins and the very short styles are evidence of *S. aurita*. The striae under the bark are always few in this hybrid in my experience."—Fraser. "The evidence for each of the suggested parents is ample, in my opinion."—Pearsall.

(*Salix aurita* × *caprea*) × *caprea* (*capreola* J. Kern.). Whiteleafe, Caterham Valley, Surrey, v.-c. 17. Catkins, March 30; leaves, September 14 and May 25, 1924. On September 30, 1923, I found a willow with almost completely glabrous leaves. It resembled an untypical *S. caprea* because the leaves were elliptic or lanceolate-elliptic, acuminate and finely serrate. In 1924 I collected it at different times in order to solve its parentage and came to the conclusion that it was *S. capreola* × *caprea*; hence my adoption of the name I have given it. I suppose the synonym *S. capreola* J. Kerner would be admissible since there is no fresh element in the hybrid. The reference No. is 465. On one side of the bush was another [479] always more hairy. On the other side of it was typical *S. caprea*, not collected, and a little way off were bushes of what I take to be typical *S. aurita* × *caprea* (*capreola* J. Kern.) with smaller leaves.—J. Fraser. "No. 465 may be, but ? *S. caprea*: No. 479 may be, but not much sign of *S. aurita*."—Linton. "I should call these excellent examples of the hybrid *S. aurita* × *caprea*—the evidence of the former predominating. The short striations on the wood, the slender reddish-brown young branches slightly pubescent at the top, the coarsely crenate-serrate lower leaf margins, the small catkins with their subulate ovaries on elongated hairy pedicels, and surmounted by bifid sessile stigmas—all point to *S. aurita*. The retained pubescence of the surfaces of the leaves with their long pubescent petioles, and the densely hairy, subacute, dark-coloured bracts, indicate *S. caprea*. There are, however, features one would expect to find in this hybrid which are absent in my rather scanty leaf-material. All the leaves are entire near the apex, and the serration is most pronounced in the lower half of the leaf—the opposite to this is more usual. There is very little rugosity, and only one pair of very small stipules can be seen on my example."—Pearsall.

Salix aurita × *cinerea*. ♀. [Ref. No. 583.] Det. E. F. Linton. Oughton Head, Hitchin, Herts, v.-c. 20, April 12, June 27, 1924. Growing with several other similar bushes along a water course. I had hoped that I might find *S. cinerea*, f. *aquatica* but

Mr Linton's determination both of this and of [582] is *S. aurita* × *cinerea*. Stipules shortly stipitate.—J. E. LITTLE. "This is the hybrid. The small, obovate leaves, ± rugose in the younger stage, and the small catkins with very short styles are evidence of it. The grey undersurface of the leaves, with short and very thin pubescence, and no discernible red hairs amongst it would suggest *S. cinerea*, var. *aquatica* as one of the parents."—FRASER. "One of the best examples of this hybrid I have seen."—PEARSALL.

Populus alba L. Plentiful on the coast near Berrow, North Somerset, March 1914, August 1924.—J. W. WHITE. "There are certainly two species represented in the sheet I have received, one (the short shoot with 3 lobed leaves) belonging to *P. alba*, and the male catkin and long, young shoot to *P. canescens*. The latter has the leaves of the young shoots irregularly lobed as distinct from 3 lobed in *P. alba*. The male tree of the latter seems to be exceedingly rare according to Moss.—JACKSON.

Helleborine leptochila (Godf.) Druce. Lambridge Wood, Oxon, v.-c. 23, July 1924.—G. C. DRUCE.

Helleborine longifolia R. & B. (*Epipactis palustris* Crantz). [Ref. No. 1680.] Woodbury Common, in a wet spot near the Exmouth reservoir in plenty, S. Devon, v.-c. 3, July 27, 1924.—Coll. Miss M. WEBSTER; comm. W. S. M. D'URBAN. "Yes. *H. palustris* Schrank."—DRUCE.

Orchis maculata L. Near Broughton-in-Furness, Lancs, v.-c. 69, June 1924.—Coll. W. H. PEARSALL; comm. G. C. DRUCE.

Orchis pyramidalis L. Lysfaen quarry, near Old Colwyn, Denbigh, v.-c. 50, August 9, 1924.—A. WILKINSON.

Habenaria conopsea Benth. Lysfaen quarry, near Old Colwyn, Denbigh, v.-c. 50, August 9, 1924.—A. WILKINSON.

Allium Babingtonii Borrer. Cultivated from specimen gathered near Truro, Cornwall, v.-c. 1, June 4, 1920, at Watton, Norfolk, September 1924.—F. ROBINSON.

Juncus compressus Jacq. Between cobble stones of old causeway, Stoke-under-Ham, Somerset, v.-c. 5, July 8, 1924.—H. DOWNES.

Luzula Forsteri DC. Near Milland, W. Sussex, v.-c. 13, May 4, 1924.—J. E. LITTLE. "Good flowering examples of this graceful plant."—SALMON.

Luzula Forsteri DC. Near Parkhurst House, Black Down, W. Sussex, v.-c. 13, May 5, 1924. This is from the neighbourhood from which Syme (*E.B.*) records *L. Borreri*.—J. E. LITTLE.

Luzula Forsteri DC. Woods, Lurgashall, W. Sussex, v.-c. 13. May 8, 1924.—R. J. BURDON, and lane below (east of) Aldworth House, towards Gospel Green, Black Down, W. Sussex, v.-c. 13. April 26, 1924.—J. E. LITTLE & R. J. BURDON. All the specimens under the latter label were gathered from one root. There is a question whether the plants from both localities, and also those from near Parkhurst House, Black Down, sent by Mr Little, are not *L. Forsteri* × *pilosa*. Lurgashall (=Lugger's Hall) is also one of Syme's recorded stations for *L. Borreri*.—J. E. LITTLE.

Typha latifolia L. In and about large sheet of water near Helsby Station, Cheshire, v.-c. 58, September 5, 1923.—C. WATERFALL.

Alisma ranunculoides L. Near Canal, Woking, Surrey, v.-c. 17, August 24, 1924.—W. BIDDISCOMBE.

Cyperus declinatus Moench. Sent by Mr W. C. Worsdell from a pondside near Bovey Tracey, S. Devon, v.-c. 3, November 1924.

Eleocharis multicaulis Sm. [Ref. Nos. 2705 and 2720.] Marsh Dwarfie Stane, and marshy heath, Burn of Quoys, Hoy, Orkney, v.-c. 111, August 6 and 13, 1924.—H. H. JOHNSTON. "In flower only, but unmistakable, stigmas 3."—SALMON.

Scirpus maritimus L. Edge of pool near Helsby Station, Cheshire, v.-c. 58, September 5, 1923.—C. WATERFALL.

Scirpus filiformis Savi. Wet boggy ditches above Mullion Cove, W. Cornwall, v.-c. 1, June 28, 1924.—C. WATERFALL.

Scirpus caricis Retz. (=*Blysmus*). Sandhills, Birkdale, Lancs, v.-c. 59, August 1924.—D. P. MURRAY.

Rynchospora alba Vahl. Bogs, Rahan, Offoly, Ireland, July 1923.—D. P. MURRAY.

Carex vesicaria L. Marshland between Langport and Muchelney, S. Somerset, v.-c. 5, July 8, 1924. A New County Record.—H. DOWNES. "Yes."—DRUCE

Carex helodes Link. Bog, Middlewick, Colchester, N. Essex, v.-c. 19, June 17, 1923.—G. C. BROWN.

Carex punctata Gaud. Studland, Dorset, v.-c. 9, June 23, 1924.—W. BIDDISCOMBE.

Carex ornithopoda Willd. Hill slopes, Cressbrook Dale and Millersdale, Derbyshire, v.-c. 57, May 22, 1924.—D. P. MURRAY.

Carex pilulifera L. Old wall on roadside and moorland about R. Mite, near Eskdale Green, Cumberland, v.-c. 70, June 4, 1923. —C. WATERFALL.

Carex helvola Blytt. Lochnagar, S. Aberdeenshire, v.-c. 92, August 1924.—G. C. DRUCE, also R. J. BURDON.

Carex Pairaei F. Schultz. Greensand, Rowney Warren, Beds, v.-c. 30, June 14 and July 30, 1924. On a leaf 3 mm. wide the ligule is the same in breadth and 2.5 mm. long. "Ligula latior quam longa" (Kükenthal). Is this invariably so in *C. Pairaei*?—J. E. LITTLE. "So I should name it."—A. BENNET. "Yes."—DRUCE. "I agree."—SALMON.

Carex divulsa × *remota*. Near Waldron, E. Sussex, v.-c. 14, June 11, 1924. First seen by Mr Salmon, and apparently a new hybrid.—A. H. WOLLEY-DOD. "Gathered (in the company of Col. A. H. Wolley-Dod) amidst an abundance of *C. remota* and with *C. divulsa* in small quantity not far away. No other Carices were seen in the immediate vicinity. Only one very large tussock was found of the hybrid and this, whilst recalling *remota* rather than *divulsa*, differed from the former in possessing usually only one long bract and culms strongly scabrid near the summit. The lower spikelets were female at the base, male above, and the uppermost almost wholly male. The plant appeared to be sterile."—SALMON. "I cannot find any such hybrid given for Europe in Nyman, Richter, etc. *Divulsa* is not a common European species outside England. As with most hybrids the finder is usually the best judge, seeing it growing, and I do not see anything to deny it, but evidently towards *remota* rather than *divulsa*."—A. BENNETT.

Carex incurva Lightf. Dunes, Sumburgh, Zetland, v.-c. 112, August 1924.—G. C. DRUCE. Spiggie, Dunrossness, Shetland, August 9, 1924.—R. J. BURDON.

Carex divisa L. Near Slepe Heath, Corfe, Dorset, v.-c. 9, June 23, 1924.—W. BIDDISCOMBE.

Panicum sanguinale L. [Ref. No. 24.6.] Cardiff Docks, Glamorgan, v.-c. 41, September 1924.—Coll. A. E. WADE; comm. NATIONAL MUSEUM OF WALES. "Yes."—DRUCE, *Setaria glauca* Beauv. Waste ground on Hythe Quay, Colchester, N. Essex, v.-c. 19, September 21, 1924.—G. C. Brown. "Yes." —Druce. "Yes; seemingly more frequent nowadays in England than *S. viridis*."—Salmon. Waste ground, Bradford, S.-W. Yorks, v.-c. 63, September 3, 1923.—J. Cryer.

Spartina stricta Roth. Coast north of Nagden Marshes, Graveney, E. Kent, v.-c. 15, September 15, 1924. Sent from a locality not recorded in Hanbury and Marshall's *Fl. Kent* (1899), where it grows in abundance. I could see no sign of it "between Whitstable and Seasalter" (*Fl. Kent*) and doubt if it still occurs there.—C. E. Salmon.

Leersia oryzoides Sw. Amberley Wild Brookes, Sussex, v.-c. 13, August 22, 1924.—Coll. D. M. Heath; comm. F. Robinson.

Phalaris canariensis L. Waste ground, Hythe Quay, Colchester, N. Essex, v.-c. 19, July 6, 1924, with *P. paradoxa* and *minor* but, as usual in this spot, scarcer than either and with very inflated sheaths.—G. C. Brown.

Phalaris minor Retz. Waste ground, Hythe Quay, Colchester, N. Essex, v.-c. 19, July 6, 1924.—G. C. Brown. "Yes; but my sheet had also small specimens of *P. canariensis* with it."—Druce.

Agrostis verticillata Vill. St Sampson's and Peter Port, Guernsey, July 1924.—F. Robinson.

Agrostis alba × *verticillata*. St Sampson's, Guernsey, July 1924, with both parents.—F. Robinson. "Possibly *A. verticillata* × *palustris* (=*alba*, auct. ? of L.)."—Druce. "The general appearance is that of *A. verticillata* and the fact that the flower is only about two-thirds the length of the glumes agrees; on the other hand the characters of the glumes only with the keel scabrid, and the very unequal pales agree with *A. alba*. I therefore agree to the name *A. alba* × *verticillata*."—Howarth.

Agrostis setacea Curt. [Ref. No. 24.8.] The Garw Fechan Road, above Pontyrhyl, Glamorgan, v.-c. 41, 1924.—Coll. J. A. Webb; comm. National Museum of Wales.

Polypogon monspeliensis Desf. Cardiff, Glamorgan, v.-c. 41, September 1924. From a small colony growing on the margin of a brackish pond along with *P. littoralis* which I hope to send next year.—R. L. Smith. "Yes, a robust form."—Druce.

Aira caryophyllea L. Quenvais, Jersey, June 16, 1923.—W. C. Barton, *Aira caryophyllea* L., var. ? La Corbière, Jersey, June 16, 1923. This looked distinct from the typical form when growing, but I was unable to satisfy myself that it comes under var. *aggregata* Tim.—W. C. BARTON. "I see no reason for separating this from the type."—HOWARTH.

Aira caryophyllea L., var. Frilford, Berks, June 1924.—G. C. DRUCE. "Similar to Mr Barton's ? var. Cf. Husnot *Gram. Pl.* xii."—HOWARTH.

Aira praecox L. Steep moorland path between Miterdale and Eskdale, Cumberland, v.-c. 70, June 4, 1923.—C. WATERFALL.

Deschampsia caespitosa Beauv. Corbière, Jersey, May 18, 1924.—L. CUMMING. "This is a small form of *Aira caryophyllea* L."—DRUCE. "My specimens are small *Aira caryophyllea* L., and agree with Mr Barton's plant from the same locality."—I. M. ROPER.

Cynosurus echinatus L. St Ouen's Bay and elsewhere, Jersey, July 1924.—F. ROBINSON.

Molinia caerulea Moench, var. *arundinacea* Asch. & Graeb. [Ref. No. 2190.] Bog, Middlewick, Colchester, N. Essex, v.-c. 19, August 1, 1924.—G. C. BROWN.

Desmazeria loliacea Nym. St Ouen's Bay, Jersey, June 16, 1923. Growing in sand at the side of the road in considerable quantity, closely packed and erect.—W. C. BARTON. Steep sandy cliffs above Carthillian Cove, W. Cornwall, v.-c. 1, June 30, 1924.—C. WATERFALL.

Briza maxima L. Corbière, Jersey, May 21, 1924.—L. CUMMING.

Briza minor L. Waste ground, St Peter's, Jersey, July 1924.—G. C. DRUCE.

Poa trivialis L., var. *septentrionalis* Dr. Lerwick, Shetland, August 3, 1924.—R. J. BURDON.

Poa compressa L., var. *Langeana* Koch.? Wall top in shade, Wraxall, N. Somerset, v.-c. 6, July 23, 1924. Seems to agree with the characters of pales and webbed florets, etc., as described, and quite distinct in appearance from the typical form from other spots on the wall.—G. C. BROWN. "The description of this variety given by Ascherson and Graebner is, 'Usually robust; culm 5-8 dm. high; leaves 5 mm. diam., ligules 3 mm. long; panicle larger, more than

1 dm. long, the lowest node with four branches; spikelets more compact, 8-11 flrs.; fertile glume rough on the sides and keel but not hairy.' Mr Brown's plant cannot possibly be fitted in here. Nor does it agree with *P. subcompressa* Parn. since its outer pales are only three-ribbed. Evidently it is just a form of *P. compressa* L."—HOWARTH.

Glyceria distans Wahl., var. *prostrata* Beeby. Catfirth, Zetland, August 1924. Properly speaking the name should be *Puccianella distans*, var. *prostrata* Beeby, comb. nov.—G. C. DRUCE. "What *is* the correct spelling? Richter has it 'Puccinellia,' Husnot 'Pucciniella:' both refer to Parl. *Fl. It.* i., 367, 1848."—HOWARTH.

Festuca Broteri Nyman (= *Vulpia sciuroides*, var. *longearistata* Willk.). Hedgebank, Norton Fitzwarren, S. Somerset, v.-c. 5, June 6, 1924. Awns 2-3 times longer than glumes.—I. M. ROPER.

Festuca Myuros L. [Ref. No. 1674.] "Newport," Countess Wear, near Exeter, S. Devon, v.-c. 3, June and July 1924. This grass appeared in great quantity and of unusual luxuriance in the flower borders and other parts of the garden here during the past summer. The great length of the panicle and its triangular form when fully expanded gave it a most striking appearance and was very beautiful. Previous to this year it had only been noticed in the stable yard where a smaller form comes up annually. The garden plants were from 3 feet 7 inches to 4 feet high.—W. S. M. D'URBAN.

Bromus rigens L. (= *B. maximus* Desf.). Hythe Quay, Colchester, September 1924.—G. C. DRUCE.

Bromus sp. Sainfoin field, Sudeley Hill, v.-c. 33, at 900 feet, August 12, 1924.—H. J. RIDDELSDELL. "*Bromus secalinus*."—MARQUAND. "*Bromus commutatus* Schrad., small and untypical.'—SALMON. "Is this not *B. commutatus* Schrad.? the older name of which appears to be *B. pratensis* Ehrh."—DRUCE. "This is *Bromus commutatus* Schrad. and appears to correspond to the var. *scabratus* Lk."—HOWARTH.

Lolium perenne L., forma. Stoke-under-Ham, Somerset, v.-c. 5, June 1924.—H. DOWNES. "This is the var. *compressum* Sibth.'—DRUCE. "Yes; the var. *compressum* Sibth. in which the central rachis is shortened to form a broad, ovate spike."—I. M. ROPER. "Not a form, nor a variety, but a teratological state which Parnell described and figured as var. *racemosum*."—SALMON. "This plant is described and figured by Scheuchzer (*Agrost.* p. 29, t. 1, f. 7D).

It is the *L. perenne*, var. *cristatum* Döll and *L. cristatum* Pers. It differs from Parnell's var. *racemosum* in that in the latter the spikelets are pedicelled; here sessile."—HOWARTH.

Agropyron caninum Beauv. [Ref. No. 2071.] Hedgebank on chalk, Farnham, N. Essex, v.-c. 19, August 6, 1923. In my experience decidedly scarce in v.-c. 19, at any rate in the Colchester district, and in this extreme western end of the county.—G. C. BROWN

Hordeum jubatum L. Waste ground, Cardiff Docks, Glamogan, v.-c. 41, September 7, 1924.—R. MELVILLE.

Lastrea aemula Brackenridge. (*Nephrodium aemulum* Baker). [Ref. No. 2724.] Heathery cliffs at seashore, sea cliffs between Sea Geo and Bring Head, Hoy, Orkney, v.-c. 111, July 30, 1924; also grassy banks at seashore, North Point, Fara, South Isles, Orkney, July 30, 1924 [Ref. No. 2675].—H. H. JOHNSTON. "Yes; the *Dryopteris aemula* Kuntze."—DRUCE.

Hymenophyllum peltatum Desv. Rocks on bank of mountain stream, flank of Hattside Fell, Over Eskdale, Cumberland, v.-c. 70, June 1, 1923.—C. WATERFALL.

Osmunda regalis L. Swamp in Miterdale Plantations, near Eskdale Green, Cumberland, v.-c. 70, June 4, 1923.—C. WATERFALL.

Ophioglossum vulgatum L Northcliffe Wood, Shipley, S.-W. Yorks, v.-c. 63, on millstone grit, at 450 feet, July 24, 1924.—J. CRYER.

Ophioglossum vulgatum L., var. b. *polyphyllum* Braun. (= *O. vulgatum* L., var. *ambiguum* Coss. & Germ.). [Ref. No. 2680.] Short natural peaty pasture at top of cliffs at seashore, west end of Calf of Flotta, Orkney, v.-c. 111, August 1, 1924.—H. H. JOHNSTON.

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THE BOTANICAL SOCIETY AND EXCHANGE CLUB OF THE BRITISH ISLES.

(VOL. VII. PART V).

Victoria Regina.

Floreat flora.

REPORT FOR 1925

BY THE

SECRETARY,

G. CLARIDGE DRUCE.

to whom, at Yardley Lodge, 9 Crick Road, Oxford, the Subscription, 12s 6d per annum, and Non-Contributing Member's Subscription of 10s per annum, should be paid on and after January 1, 1926.

Exchange Club Parcels for 1926 should be sent, post paid, on or before 15th December 1926, to

T. J. WALL, Esq.,

Northcote, Alexandra Road, Malvern,

who will act as Distributor and Editor of the B.E.C. Report.

Printed by T. Buncle & Co., Arbroath.
June 1926.

PRICE 10/-.

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THE
BOTANICAL SOCIETY & EXCHANGE CLUB OF THE BRITISH ISLES.

THE REPORT OF THE SECRETARY & TREASURER,

G. CLARIDGE DRUCE, YARDLEY LODGE, OXFORD,

FOR 1925.

BALANCE-SHEET FOR 1924.

Subscriptions received,	£233	12	3	Printing Reports,	£184	17	9
Sales of Reports and Advertisements,	22	5	6	Distributor's Expenses,	2	3	3
Reprints,	3	3	0	Postages, Carriages, Binding, Stationery, Experts, &c.,	26	0	0
Balance from 1922,	24	14	8	Towards List,	40	0	0
				Balance carried forward,	30	14	5
	£283	15	5		£283	15	5

Towards List,	£130	0	0
Donation towards List, R. H. Williamson, Esq.,	25	0	0
Orders for List,	8	6	6
	£163	6	6

Audited and found correct, January 20, 1926.—F. TWINING.

The subscriptions—Ordinary Members, 10/-; Exchange Members, 12/6—are due, and should be paid on the first of January each year to G. C. Druce at the above address, or to the Botanical Exchange Club Account, Westminster Bank, Oxford Branch. Payment in advance for two or more years saves trouble and Expense. Entrance fee for New Members, 5/-.

The Exchange Club plants were distributed by Mr W. O. Howarth, M.Sc., of Manchester University, and the members are very grateful to him for so excellently carrying out the onerous task of sending out 4240 specimens and for his valued critical notes and good editing of the *Report*.

The year 1925 was not marked with any very remarkable discovery. The glorious weather of July enabled some of the Scottish alpines, *i.e.*, *Gnaphalium norvegicum* and the Hieracia to flower freely.

In Britain the magnificent display of *Chaerofolium sylvestre* was a sight to remember, the country roads in Herts, Beds, Oxford, Berks, etc., being a passage through sea-foam, and the line of blossom could be seen for miles ahead. In north England *Myrrhis Odorata* also offered a splendid sight.

We have lost many valued members by death. These include the veteran botanist and Fellow of the Royal Society, Mr W. P. Hiern, of Barnstaple, a great educationalist, a strong upholder of the principle of priority in nomenclature, and one of the first British botanists to describe the forms of the Water Buttercups, and the earliest recorder of *R. sphaerospermos*, which for a time suffered oblivion, but has now been restored to our List; Lord Leverhulme, who helped us in our Benevolent Fund; Mr Gamble, the very able Indian botanist, whose *Flora of Madras* is an excellent example of clear thinking, critical knowledge, and painstaking industry; Mr Cheesman, J.P., Selby, an acknowledged authority on the Mycetozoa, and my fellow traveller in South Australia; Mr James Farrer, of Ingleborough, the father of Reginald Farrer; Mr Brock, the able gardener to the Duke of Richmond at Goodwood, who carefully looked after the interest of *Orchis hircina*, and Mr W. G. Clarke, of Norwich, who was so enthusiastically interested in the natural science of Norfolk, and who was preparing to publish a book on which he had spent much labour. We have also lost two Honorary Members, Mr J. H. Maiden, the well-known authority on *Eucalyptus*, who died very soon after his retirement, and honest Jean Massart of Brussels, who was untiring in his efforts to save the natural beauty and the rare plants of Belgium against the encroachment of a busy commercial progress and his own country in less happy days against the defilement of invasion. They have left not only Australia and Belgium but the whole botanical world the poorer for their loss. It becomes increasingly difficult to fill the places—widespread and expensive as is our national education—yet the competing attractions of football, cinemas, golf, revues and dances appear to be too powerful rivals, and one has to acknowledge that the interest in our and other branches of natural science seems to lack the presence of devotees, such as the last half of the nineteenth century afforded excellent examples in all grades of life.

The output of Botanical literature in 1925 has not been large, yet it witnesses the production of the eleventh edition of " The London Catalogue " by Mr F. J. Hanbury and Mr C. E. Salmon. This enumerates 2362 species as against 2075 in the previous edition. The Hieracia have risen in numbers from 132 to 247, chiefly by raising varieties or sub-species to full specific grade, but the Rubi are only eight more, and the Rosae twelve. Three more Euphrasias are given, but *atroviolacea*, *Lumbii* and *minima* are omitted. The Capsellas and Taraxaca are " intentionally omitted " to prevent the Catalogue being " too unwieldy." Mr Hanbury is to be congratulated upon producing such a useful Catalogue in so neat and well-printed a form. Mr C. B. Tahourdin has issued a small brochure on the Native Orchids of Britain, and Mr St John Marriott has given an excellent ecological account of a Kentish woodland. We are pleased to see the *Irish Naturalists' Journal* has been started and we wish it all success. One hopes that in its pages will be found shortly a detailed comital list of Irish plants bringing Topographical Botany up to date.

The Wild Flower Society pursues its way with its accustomed enthusiasm, and we congratulate Mrs Dent and her excellent lieutenants on their stimulating zeal in so good a cause.

We are again deeply indebted to Dr S. H. Vines, F.R.S., the Rev. F. Bennett, M.A., Mr T. Gambier-Parry, M.A., and Mr R. H. Corstorphine, B.Sc., for their kind literary assistance.

We have pleasure in warmly thanking our plant experts for their most valuable help. These include Dr Albert Thellung, whom we congratulate very warmly on his splendid work on the Umbelliferae which is appearing in Hegi's " Illustrierte Flora;" Dr E. Almquist; Prof. C. H. Ostenfeld; Prof. J. Holmboe; Mr H. Dahlstedt; Mr B. Danser, who we trust will thoroughly enjoy his visit and studies in Java; Dr Karl Ronniger; Dr C. Lindman, who we are rejoiced to see has recovered from his serious indisposition; Dr J. Murr, who is to be commended for his industry in producing the Flora of Voralberg and Liechtenstein; Mr J. Fraser for his excellent researches in Menthae; Mr Arthur Bennett; Mr W. H. Pearsall; Mr D. Lumb; the authorities of the Royal Botanic Gardens at Kew and Edinburgh, of the British Museum Natural History and other helpers.

It is pleasing to see that the Albert Medal of the Royal Society of Arts has been awarded to Lt.-Col. Sir David Prain, C.M.G., and that a Knighthood has been conferred upon R. H. Biffin of Cambridge, a fitting reward for his assistance to Agricultural Botany: and on Professor J. B. Farmer, F.R.S., of the Royal College of Science. Emeritus-Professor F. O. Bower has had the Hon. LL.D. conferred upon him by Glasgow University, a prophet honoured in his own country.

It is only fitting that the years of labour given by Dr Daydon Jackson to Botanical Science and as Librarian to the Linnean Society for 45 years, is to be recognised by a presentation portrait. Another pleasing incident was the presentation, in recognition of his great services to Horticulture, Arboriculture, Zoology, Archaeology and Authorship, of a cheque for £500 and several handsome pieces of plate to Sir Herbert Maxwell, Bart., which took place at Newton Stewart under the chairmanship of the Hon. Hew Dalrymple, when Sir Arthur Agnew made the presentation. We are glad to see that Sir John A. Gladstone of Fasque has become President of the Royal Scottish Arboricultural Society. The warmest congratulations are offered to our veteran botanist, Sir W. Thiselton Dyer, F.R.S., on the completion of the "Flora Capensis." This work was actually begun by Dr Harvey, Professor of Dublin University, and Dr Sonder of Hamburg, at the suggestion of Sir Wm. Hooker, the first volume appearing in 1865. Since then under Dyer's guidance the remaining eight volumes have been published—the whole enumerating 11,705 species, a close approximation to the 10,000 species Sir Wm. Hooker estimated the whole work would contain. It may be said that 2016 new species are described. "The Flora of Tropical Africa" was also, for some years, under his control. Now Sir David Prain is its editor. When completed it will occupy twelve volumes. (See *Kew Bulletin* 289-293, 1925.)

The completion of the "Flora Capensis" recalls the stinging criticisms on the preparation of this and the "Flora of Tropical Africa," which too frequently appeared in the *Journal of Botany* from the pen of Mr Britten, notably on pp. 47 and 48, 1901, in which he states that the latter was entrusted to Sir W. T. Dyer in 1872. On p. 80 of the same Journal, on the threat of an action for libel, appeared an apology "with reference to the editorial notes contained in the *Journal of Botany* for January 1901, p. 47 and 48, reflecting on you and your work in connection with the preparation of the *Flora of Tropical Africa*, I desire to offer to you an expression of my sincere regret for the same. The preparation was not committed to you until the year 1891, and my statement that it has been in your hands since 1872 is incorrect. I sincerely apologise to you for having imputed to you unnecessary delay in its preparation, and I desire to withdraw all reflections and imputations affecting you of every kind whatever contained in the editorial notes referred to." This apology was also sent to *Nature*, *The Gardeners' Chronicle*, etc., and a monetary payment which Sir William, I believe, sent to a hospital, settled the matter.

We note that Major K. W. Braid has been appointed Professor of Botany to the West of Scotland Agricultural College, and that Professor Dr Edwin John Butler, C.I.E., succeeds Prof. W. Somerville in the School of Rural Economy at Oxford. We trust that freedom from official duties may restore our member to health.

It is gratifying to see that the Royal Horticultural Society has awarded the Grenfell Medal to Miss C. G. Trower for her beautiful and accurate paintings of British Rubi. Congratulations are offered to Mr and Mrs Walter Hills on their golden wedding. Mr Hills was President and Treasurer of the Pharmaceutical Society.

The new members include the Marquis of Aberdeen and Temair, Fr. Louis Arsène, Mrs E. Armitage, Mrs Beatty, Mrs H. H. Bloomer, Mrs Bruce, Dr J. Burtt-Davy, the Hon. Mrs Chapman, Dr W. Craik, Miss Edgar, Mr J. Edward (1926), Mrs M. Evershed, Mr Seton Gordon, Mr J. S. L. Gilmour, Colonel H. Haig, Mr T. R. Hayes, Mr J. W. Hartley, Lady Holford, Prof. J. Holmboe, Captain A. Lascelles, Mr A. Lofthouse, Captain O. H. Batten-Pool (1926), Miss D. Powell, M.Sc., Mr A. R. S. Proctor, Mr Granville Proby (1926), M. Paul de Riencourt, Dr Herbert Smith, Miss Nancy H. Smith (1926), Miss Soper, Dr James Taylor, Mr H. J. Wheldon, Mr J. A. Williams, and Mrs Whitbread.

With the Hon. Mrs Baring we enjoyed the hospitality of Lady Kathleen Stanley at Penrhos in Anglesey in the middle of May. *Scilla verna* was in splendid flower on the coast with *Cochlearia danica* and *officinalis*. Lady Stanley of Alderley, years ago, had brought many roots of Cyclamen from Sorrento. They have spread very much in the woodlands of the ornamental grounds and there the wild masses of them, in flower with *Scilla hispanica* and *Myosotis sylvatica* make a beautiful sight. We saw the seedlings of *Helianthemum Breweri* in its classic station, and also *Senecio spathulifolius* not yet in blossom. *Mibora* was poor, and *Ranunculus cambricus* not in good evidence. This, I think, must be a form of *fluitans* rather than *peltatus*. There was little out on Snowdon, but we were able to see *Cotoneaster* on the Orme. Then I went to Orton to note the plants in the Marchioness of Huntly's herbarium and began my work at the Hunts flora. The following week, with the Misses Trower, Wood Walton was visited, and we saw *Viola stagnina* and *V. montana* (the latter distributed this year) in good flower.

TEESDALE.

In early June, with some of our members, Teesdale was visited. We had a week of perfect weather. The wonderful foamy flowering of *Myrrhis* was delightful to see. *Viola arenaria* was nearly over flower, but *rupestris* hybrids were in blossom, as was *Arenaria uliginosa*. *Gentiana verna* has sadly suffered from the toll taken of it. Miss Todd was at Langdon, Mr Foggitt came over from Thirsk, and Lady Mexborough, Lady J. Legge, Mrs Baring and others were at High Force. *Silene nemorum* was in beautiful flower at Barnard Castle. A second visit was made to Huntingdonshire, and then another meeting of the clans took place.

NORFOLK AND SUFFOLK.

We stayed first at Bury where a great variation in *Papaver Rhoeas* was seen, and then, with some members, I was the guest at Blo Norton with Prince Frederic Duleep Singh. We saw *Liparis* in flower with pure white *Orchis incarnata*, *Chara aculeolata*, an interesting form of *Equisetum palustre*, *Orchis praetermissa* and its hybrid with *Fuchsii*. We got *Galium anglicum* at Harting. It seems to have gone from Thetford. *Bromus tectorum* is still, after

30 years, plentiful near Thetford. We also saw *Veronica spicata* in flower.

SUSSEX.

We had another meeting at the kind invitation of Lord and Lady Buxton at Newtimber. Shoreham was visited but *Trifolium stellatum* was almost gone. At Newhaven *Crepis foetida* still flourishes and on the Lewes levels there was a splendid growth of *Potamogeton panormitanus*, var. *minor* Biv. in full flower. On the downs above Newtimber *Aceras* was still in flower. Early July was spent at Elton with Colonel and Lady Margaret Proby and several hard days' work at the Hunts flora were made, *Rumex Weberi* being found near Earith, and the true *Viola montana* at Wood Walton.

SCOTLAND.

I left Peterborough by the night train and met Mr and Mrs Williamson who kindly took me in their car to Bridge of Allan where *Cynosurus echinatus* grew by the roadside. The next day we went to Kenmore by way of Dunblane, Callander, the Trossachs, and Killin. *Chaerophyllum aureum* is still very abundant by the Teith, and the hybrid, *Carex vesicaria* × *inflata* persists there. *Lysimachia thyrsiflora* is abundant, but barren. *Hieracium pulmonarioides* was in good flower at Kenmore in the locality in which Mr Pugsley found it. We then went by way of Aberfeldy, Blair Athol, and Kingussie to Grantown where an evening's walk with Mr Kerr showed us *Linnaea* in good flower. The next day was devoted to Culbin Sands where we saw quantities of *Goodyera* and *Centaurium vulgare*, and added *Carex extensa* and some other plants to its list. Then we went by Inverness to Strathpeffer but could see no sign of *Pinguicula alpina*. In the pond near the golf course there was a great quantity of an apetalous Batrachian and we also saw *Taraxacum naevosum*. On the lovely journey by Strath Carron and Loch Maree to Gairloch, we were enabled to add *Hypericum humifusum* to Ross-shire. Unfortunately the next day was wet, but several plants were added to the list. Next we motored to Poolewe where the foreshore was a mass of *Cochlearia groenlandica*, then on to Greenard where *Callitriche polymorpha* was found, and by Dundonnell and Braemore to Ullapool. Then we visited the rocks of Cnochan and obtained *Rumex arifolius* in both Ross and Sutherland, and *Galium pumilum*, new to the former county. *Carex rupestris* grew by the roadside. The quantities of *Trollius* near Leadbeg were extraordinary and contrasted charmingly with *Orchis praetermissa* and the var. *pulchella* with which it grew. The hill slopes were adorned with very large flowered *Rosa spinosissima*, brilliant *Polygala vulgaris* and acres of *Dryas*. Then on to Inchnadamph where *Arenaria norvegica* was in flower, and *Habenaria albida* was in good show.

From Inchnadamph we made an unsuccessful attempt to get over Scourie Ferry, but after about eight miles of atrocious roads we found so strong a wind was blowing that the very disagreeable Charon would not venture, so we had to come back with only the very grand view of Quinag to repay us. We, therefore, went across to Lairg by Oykell bridge to see the Hieracia and along Strath Naver to Bettyhill. There all the characteristic plants were seen but *Oxytropis* was over its best. I got *Hieracium pseudo-zetlandicum* in its classic spot. We wasted a day in visiting an island which was practically barren save for *Euphrasia foulaensis*. Then we went on to Melvich in order to see *Hieracium maritimum*, and across Scotland to Helmsdale and Golspie. There we saw plants of *Moneses* in good flower and on to Dingwall, Inverness, and Grantown, a pretty good day. The next day to Blair Athol, Perth, Glen Farg, where *Lychnis Viscaria* was over its best, and on to Kinross where *Ranunculus reptans* was in good flower; lastly, on to Edinburgh where a visit to Leith docks was not very productive. The end of the month was spent with Sir R. Curtis at Lichfield, where we saw *Elisma natans* in splendid condition, and we also explored Aqualate with rather negative results. *Impatiens glandulifera* is quite naturalised in this county.

A short visit to Biddesden resulted in the Hon. Mrs Baring and the writer finding *Mentha alopecuroides* in N. Hants near to Biddesden, and another visit to Colchester resulted in finding a Chenopodium new to science, alien of course. It has been independently found there by Mr G. C. Brown.

One cannot close these notes without offering my warmest thanks for the great kindness of the members in giving me such an artistic Book-plate. Curiously I had just decided to have one when on

Lochnagar the subject was broached to me by some kind friends. Nothing could have delighted me more, and I do offer my profound gratitude to the members who subscribed, to the kind friends who organised it, to Lord Grey for presenting it, and to Sir George and Lady Holford for allowing the presentation to be made at Dorchester House.

I have also to offer my sincere thanks to the Council of the National Museum of Wales for making me a corresponding member, and to the Société Botanique de Genève for making me a corresponding member at their recent jubilee.

PLANT NOTES, ETC., FOR 1925.

(*Mostly New Plants to the British Isles or Notes on British Species inserted here for Convenience of Reference.*)

ABBREVIATIONS.—† before a name signifies the plant is not native; × = a hybrid; ± more or less; ! after a locality, that the Secretary has seen the plant there; [ ] that the plant is not British or the record is doubtful; *Ann. Bot.* = *Annals of Botany; Bot. Abstr.* = *Botanical Abstracts; Gard. Chron.* = *Gardeners' Chronicle; Ir. Nat.* = *Irish Naturalist; Journ. Bot.* = *Journal of Botany; Nat.* = *The Naturalist.*

8. ANEMONE PULSATILLA L. See paper by W. E. Ingwerson in *Gard. Chron.* 74, 1925, with a view (29) of the Hertfordshire locality near Tring, and another capital illustration of the plants growing in the turf (30), where it is called " Dane's Blood " or " Crocus " by the country people. He considers the English plant to be varietally distinct from the continental plant, being dwarfer and compacter in habit, the character being maintained in cultivation. As I pointed out in *Fl. Berks* 5, 1897, some of our plants are *tenuifolia* (Schleich.) = *angustisecta* Reichb. G. C. DRUCE.

22. RANUNCULUS BULBOSUS L., FLORE PLENO. See *Gard. Chron.* 402 and 420. = *R. speciosus* Vilmorin Flore Plein Terre 722. Near Wisley, Surrey. Removed to garden, it grew to two feet high and to about two feet in diameter. W. H. DIVERS.

30. R. SCELERATUS L., lusus FASCIATUS. Moist ground by the River Itchen, Bitterne, S. Hants. See Prof. S. Mangan in *Gard. Chron.* 408, 1925, fig. 184. " The stem was ten inches wide. The ridge at top is formed by the common development of about one hundred flowers and consists of a continuous waved receptacle completely covered with carpels and bearing the stamens, petals, and sepals in long rows underneath."

47. R. FICARIA L., FLORE PLENO. Near Cuckfield, Sussex, with the type, 1925. H. BARNES.

51. HELLEBORUS VIRIDIS L., var. OCCIDENTALIS (Reut.), forma GUTTATUS mihi. This differs from the type in the sepals, as pointed out by its finder, Mr A. Beadell, having a purplish-brown blotch at their base. It has been seen by him in its habitat, Crab Wood, near Warlingham, Surrey, for some years, growing with normally coloured plants. It must not be confounded with the cultivated *H. purpurascens* W. K.

55 (2). NIGELLA GALLICA Jord. Alien, France. Bristol, W. Gloster, C. & N. SANDWITH.

68. ACONITUM ANGLICUM Stapf in Bot. Mag. t. 9088, 1926. Under this name Dr Stapf describes our English Aconite which was quite recently determined as *A. Napellus*, var. *laciniosum* Seringe. See Barton in *Rep. B.E.C.* 485, 1918. This name is used in the last edition of the *London Catalogue*. It flowers earlier and is of a paler colour than the Continental *Napellus* (*compactum*), with leaves of a thinner texture.

72. BERBERIS VULGARIS L. (U.S.A. Dept. Circ. 356, July 1925), by F. E. Kempton and N. F. Thompson. Suggests the use of common salt in order to eradicate this agricultural pest, about 10 pounds being sufficient to kill an ordinary bush. In 1916 it is estimated that 180,000,000 bushels of spring wheat alone were destroyed by the Barberry rust. The average loss in the U.S.A. for eight years, 1916-1923, was about 50,000,000 bushels. The salt should be applied in the solid about the base of the shoots. Kerosene is also recommended, large plants requiring about a gallon.

80. PAPAVER RHOEAS L., nov. var. TROWERIAE Druce. Plant 12-18 in.; leaves glaucescent, pinnatifid, the lower leaves with broadly decurrent lobes which are short and abruptly acuminate and angularly cut, the upper leaves with smaller and more deeply toothed lobes; hairs on stem patent, yellowish-brown: petals paler red than type; stamens black; pollen normal; capsule with dark crimson stigmatic discs. The plant has the aspect of *Lamottei*, but there is no evidence of hybridity. Bury St Edmunds, Suffolk, June 1925.

Growing with many other varieties of micro-species in great profusion, this plant could be easily picked out from its congeners. I have named it after Miss Charlotte Trower, whose beautiful paintings of British plants have won the medal of the Royal Horticultural Society. She was with me when it was gathered. G. C. DRUCE.

92 (2). CHELIDONIUM LACINIATUM Mill. Prof. R. Ruggles Gates (*Nature* 499, 1925) in a lecture at King's College in March 1925, says the earliest known record is 1599 by Sprenger, an apothecary at Heidelberg, who found it in his garden among typical plants. It bred true from seed and has done so ever since. Many thousands appeared in Sprenger's garden without a throw-back, assuming that it is a mutant. We have two other instances which may be paralleled—*Lychnis Preslii* and *Bromus interruptus*. But we lack scientific evidence that *Chelidonium laciniatum* was not in existence before its appearing at Heidelberg. The remarkable thing about the *Chelidonium* and the *Bromus interruptus* is the rigid transmission of the characters—the laciniate petals and leaves in the *Chelidonium*, the split-glume and the interrupted inflorescence in the *Bromus*—from one generation to another. One recommends both these plants to cytologists in order to see the number and the character of the chromosomes. G. C. DRUCE. Experiments of crossing *majus* and *laciniatum*. See K. V. Ossian Dahlgren in *Svensk Bot. Tids.* 103, 1925. Hybrids of both the single and double-flowered forms were obtained.

122. RADICULA NASTURTIUM Druce. This plant has a medicinal as well as a botanical interest, and Dr S. Moncton Copeman (*Pharm. Journ.* September 26, 1925), has a paper in which he alludes to its curative powers in healing bleeding cracks on the hands of an old nurse. She pounded the herb in a mortar and drank the filthy looking expressed juice. The plant was recommended for such a purpose in Parkinson's *Theatrum Botanicum* of 1640 who owed his information to Dodsen of 1616. Haller, the great Swiss botanist, also held it in high esteem. He says " we have seen patients in deep declines cured by almost living on this plant." Dr Copeman's experiments show that it is of high value in body-metabolism and there is a Devon tradition of its curative properties in cancer cases. Dr

Bashford, at Dr Copeman's suggestion, inoculated 60 mice. The results showed that its use led to a very considerable immunity.

217. BRASSICA ALBA Boiss. and B. ARVENSIS are difficult to grow in water culture, owing, say F. Boas and F. Merkenschlazer (*Bot. Centr.* xlv., 40-53, 1925), to the ready penetrability of the plant tissues by anions as evinced by their experiments with 0.5 solution of ferrous sulphate. This, says *Nature* 886, "seems to be the phenomenon underlying the practice of destroying charlock by spraying or dusting." It is equally useful to destroy *Hypnum purum* in turf.

222. BURSA GROSSA (At.). This striking plant was gathered in the valley of the Teith at Callander, West Perth, in July 1925, and at Greenhithe, Kent, G. C. DRUCE.

222. B. ROBUSTA (At.). This coarse form grew at Gareloch, West Ross, July 1925, G. C. DRUCE.

222. B. HIATULA (At.) [BB106]. In cultivated fields near Basildon, Berkshire, June 1925 (distributed this year), and at Bury St Edmunds, Suffolk, June 1925, with Miss Trower. G. C. DRUCE.

222. B. INTEGRELLA (At.). A plant near this from Newport, Salop, July 1925, G. C. DRUCE.

248 (2). BISCUTELLA AURICULATA L. Alien, S. Europe. Airdrie rubbish coup, Lanark, R. GRIERSON. Det. KEW.

78 (7). GYNANDROPSIS DC. Prod i., 237, 1824.

280 (7). G. PENTAPHYLLA DC. Alien, tropical areas. Bristol. N. SANDWITH.

359. LYCHNIS ALBA Mill, sub-var. ROSEA. Mr J. E. Little finds this at Nine Springs, Hitchin, Herts, in the absence of *L. dioica*, which only occurs in one spot within a radius of 5 miles of Hitchin.

449 (5). LAVATERA CASHMIRIANA Camb. Alien, Himalayas. Christchurch, S. Hants, Miss S. A. ROOKE.

[477. GERANIUM DEPREHENSUM (Er. Almquist) Lindm., nov. comb. Only a few years ago this plant was observed amongst *Gera-*

nium bohemicum by Professor Ernst Almquist (=the Draba-Almquist), in the woods of the roadsides near Taltsjobaden. His nephew, Erik A., *Mag. Sc.*, described it as "*Geranium bohemicum* **deprehensum*." I had the opportunity of seeing the two forms together in great numbers there during two summers, and I am convinced that they are quite different, and *deprehensum* a species, distinct by many marks.

BOHEMICUM.	DEPREHENSUM.
Leaves very soft, velutinous or velvet, bright green; in a younger plant they form a verticillus at the base of the specimen; *lobes* acute, with acute and numerous teeth.	*Leaves* not soft, sparingly hairy, darker green; the basal ones irregularly disposed; *lobes* more blunt, at the apex broader and entire.
Corolla 16-17 mm. in diam.; colour bluish-violet, with darker lines.	*Corolla* 13-14 mm. in diam.; colour brighter violet, with a white central and purplish lines.
Seeds brown, smooth, with large greyish spots.	*Seeds* yellowish brown, one-coloured without darker spots, but not smooth, the surface all over being minutely and regularly dotted by very fine pits in rows.

E. Almquist.]

478. G. PRATENSE L., var. SEMIPLENUM. On the banks of a stream near Calne, Wilts. There is no habitation near. It is a fine plant with a mass of bloom and is different from the ordinary double-flowered garden form, July 1925, M. Colville. As Mr Fraser says, this is a highly interesting form, hitherto unrecorded. Although double-flowered it produces good seed.

486. G. PUSILLUM Burm. f., forma (vel var.) ALBUM. Sent by E. W. Shann from Oundle School, having been found near Kings Cliff in Northamptonshire. It flowered from about the middle of May to June 9.

488. G. Robertianum L. The var. *maritimum* and *G. purpureum* Vill. are discussed by P. Senay in Bull. Mens. Soc. Linn. Seine Maritime 88, 1924.

499 (5). Erodium Stephanianum Willd. Sp. Pl. iii., 625. Alien, Himalayas, N. Asia. Bristol, W. Gloster, 1924, N. Sandwith.

524. Acer Pseudo-Platanus L. At Loton Park, Salop, Mr Wardle (*Gard. Chron.* ii., 136, 1925) says there is a tree with a

girth at 6 feet from the ground of 26 feet. At 9 feet high it branches into eighteen separate trunks, each of which is as large as a big tree. The whole tree covers an area of 11,500 square feet, and it is calculated to contain over a thousand cubic feet of good timber.

574 (2). MEDICAGO MUREX Willd., var. BREVISPINA Rouy Fl. Fr. v., 33. Pod rather small (4-6 mm.); spines very short or almost absent. Leith Dockyards, Midlothian, 1925, G. C. DRUCE. Det. M. P. DE RIENCOURT.

597 *c*. MELILOTUS INDICA All., var. TOMMASINI (Jord.) Rouy Fl. Fr. v., 55. Differs from the type (inter alia) in the truncate apex of the terminal leaflet and in the shorter spikes. Found by Miss A. B. COBBE at La Grève d'Azette, Jersey, 1925. Det. M. P. DE RIENCOURT.

647. LOTUS CORNICULATUS L., var. ARVENSIS Seringe. =L. ARVENSIS Schkuhr Handb. 2259. Caulibus glabriusculis procumbentibus, foliolis obovatis. Our common form. Winnington, Hants, G. C. DRUCE.

648. L. TENUIFOLIUS L., var. LONGICAULIS (Martr.-Don. Fl. Tarn. 168, 1864, sub *corniculato*) nobis. Specimens gathered by Mr H. K. Airy Shaw at Dernford Fen, Suffolk, in 1893 [Ref. Nos. AA.502 & 503] have been referred to this variety by M. P. de Riencourt. Two forms occurred there, the smaller one of more caespitose growth and with shorter fruits. Should *Lotus tenuis* Kit. be the adopted name it will be *L. tenuis*, var. *longicaulis* (Martr.-Don.). G. C. DRUCE.

697. VICIA SATIVA L. U.S. Dept. Agr. 1289, January 1925, by Roland M'Kee and H. A. Schoth. De Candolle says its culture was first mentioned by Cato about 60 B.C. It was introduced in the States in the eighteenth century. Walter lists it in his *Flora Caroliniana* 1788. Attempts to cross *V. sativa* varieties have always resulted in failure. The few recorded cases of natural crossing have been based on very limited evidence. All the variations noted in the varieties of *V. sativa* breed true to form and suggest mutative origin.

DESCRIBED BOTANICAL VARIETIES OR SUBSPECIES OF V. SATIVA.

Var. *alba* Beck (*V. alba* Moench): Leaflets obovate to obcordate; flowers white.

Var. *amphicarpa* Coss. and Krol.: Plants bearing cleistogamous flowers; underground stems; normal stems with purple flowers.

Var. *carnea* Beck: Leaflets obovate to obcordate; flowers light pink or rose colour.

Var. *cordifolia* Beck: Leaflets strongly obcordate, the apex deeply bilobed; flowers purple.

Var. *cosentini* Arcang. (*V. cosentini* Guss.): Leaves cuneate to linear-obovate, 2 centimeters long and 6 millimeters wide; flowers purple; pods small, 6 millimeters in diameter, without pubescence, rough; seed mottled brownish and green.

Var. *erythrosperma* Reich.: Leaflets obovate to obcordate; flowers purple; seed reddish brown.

Var. *glabra* Ser. (*V. glabra* Schleich.): Plant glabrous; flowers purple.

Var. *grandiflora* Willk.: Leaflets obovate to obcordate; flowers about 3 centimeters long, purple.

Var. *incisa* Boiss. (*V. incisa* M. Bieb.): Leaflets deeply serrate; flowers purple.

Var. *leucosperma* Ser.: Leaflets obovate to obcordate; flowers purple; seed pale pink.

Var. *linearis* Lange: Leaflets narrowly linear to linear cuneate, 2 to 2½ centimeters long; flowers purple; pods small, 4 millimeters in diameter; brown when ripe. This is similar to *V. angustifolia* except for the larger flowers and brown pod.

Var. *macrocarpa* Moris (*V. macrocarpa* Bertol.): Leaflets obovate to obcordate; flowers purple; pods large, 10 to 11 millimeters wide, very prominently net veined, dark brown when ripe.

Var. *maculata* Burnat (*V. maculata* Presl): Leaflets obovate to linear-obovate, obtuse to truncate; flowers medium size, 1.7 centimeters long; pods not pubescent, small, up to 5 centimeters long and 4 to 6 millimeters wide, brown or brownish black. This is similar to *V. angustifolia* but differs in that the seed is mottled brown and green and the flowers average larger. It differs from var. *cosentini* in having finer stems.

Var. *melanosperma* Reich.: Leaflets obovate to obcordate; flowers purple; seed mottled brown and black.

Var. *nemoralis* Rouy (*V. nemoralis* Pers.): Leaflets linear-obovate, obtuse to somewhat truncate; flowers purple; pods small, 4 to 5 millimeters in diameter, brown when ripe.

Var. *obovata* Ser.: Leaflets obovate to somewhat obcordate; flowers purple; seed mostly brown or black. This includes most of the common commercial varieties of *V. sativa*.

Var. *pygmaea* Ser.: Smaller in every way than *V. sativa obovata;* flowers purple. Probably a small form due to local conditions.

Var. *remrevillensis* Huss.: Stipules entire; flowers purple.

Var. *torulosa* Beck. (*V. torulosa* Jord.): Leaflets long, obovate to widely linear, truncate; flowers large, 2 centimeters or more long, purple; pods torulose, quite rough; seed yellowish, mottled with brown.

Var. *triflora* Rouy: Leaflets obovate to obcordate; flowers purple, three or four, nearly sessile or rarely on a peduncle up to 8 centimeters long.

KEY TO VARIETIES.

Plants with underground stems, bearing cleistogamous flowers, ... *Vicia sativa amphicarpa.*
Plants without underground stems, no cleistogamous flowers.
Stipules entire, ... *V. s. remrevillensis.*
Stipules not entire.
Pods 10 to 11 millimeters, reticulate, ... *V. s. macrocarpa.*
Pods 5 to 10 millimeters, not reticulate.
Plants glabrous, ... *V. s. glabra.*

- Plants not glabrous.
  - Leaflets incised, ... *V. s. incisa.*
  - Leaflets entire.
    - Flowers three to four, ... *V. s. triflora.*
    - Flowers one to two.
      - Corolla white, ... *V. s. alba.*
      - Corolla coloured.
        - Flowers 3 centimeters long, ... *V s. grandiflora.*
        - Flowers 2 to 2.5 centimeters long.
          - Corolla pink, ... *V. s. carnea.*
          - Corolla purple.
            - Pods 7 to 10 millimeters wide.
              - Leaflets obcordate, apex deeply incised, ... *V. s. cordifolia.*
              - Leaflets obovate, ... *V. s. obovata.*
              - Leaflets obovate, seed red, ... *V. s. erythrosperma.*
              - Leaflets obovate, seed pale pink, ... *V. s. leucosperma.*
              - Leaflets obovate, seed dark, ... *V. s. melanosperma.*
            - Pods 5 to 6 millimeters wide.
              - Leaflets truncate, ... *V. s. torulosa.*
              - Leaflets not truncate.
                - Pods dark brown or brownish black, ... *V. s. maculata.*
                - Pods pale brown, at least not dark brown.
                  - Seeds mottled brown and green. .... *V. s. cosentini.*
                  - Seeds not mottled brown and green.
                    - Leaflets linear-obovate, apex rounded, ... *V. s. nemoralis.*
                    - Leaflets narrowly linear to linear-cuneate. *V. s. linearis.*

697 *c.* V. SATIVA L., var. NEMORALIS (Persoon Syn. ii., 306). Leaflets elliptical-lanceolate, rounded or subtruncate at apex, mucronate; pods, seeds, and stipules as in type. [Ref. No. AA. 231.] Frilford, Berks, 1923. G. C. DRUCE. Det. M. P. DE RIENCOURT.

729. LATHYRUS MONTANUS Bernh., var. VARIIFOLIUS (Martr.-Don. Fl. Tarn. 186, 1864, as *Orobus tuberosus*) nobis. The basal leaves are ovate, obtuse, the upper narrowly and longly lanceolate. Found by G. C. DRUCE in Ufton Wood, Warwickshire. Det. M. P. DE RIENCOURT.

741 (2). PRUNUS SEROTINA Ehrh. Alien. N. America. Naturalised and self-sown in woodland at Peper Harow, W. Surrey. See J. E. LITTLE in *Journ. Bot.* 371, 1925.

764. RUBUS INCURVATUS Bab., var. SUBCARPINIFOLIUS Rogers and Riddelsdell from v.-c.s 13, 16, 17, 22, 33, 36, 42, 43. See *Journ. Bot.* 13, 1925.

765. R. LINDLEIANUS Lees, var. LATIFOLIUS R. & R., *l.c.* 14. Armagh. Down.

770. R. NEMORALIS P. J. M., var. CORNUBIENSIS R. & R., *l.c.* 14. Cornwall, over a large area.

772. R. DUMNONIENSIS Bab., var. CORDATIFOLIUS R. & R., *l.c.* 14. Guernsey. Sark. S. Essex and Oban plants make a comparable approach to it.

784. R. THYRSOIDEUS Wimm., var. VIRIDESCENS R. & R., *l.c.* 14. V.-c.'s 1, 4, 45. Cf. *Rep. B.E.C.* 17, 1904.

799. R. IRICUS Rogers, var. MINOR R. & R. *l.c.* 14. V.-c.'s 1, 2, 3, 4, 34, 36, 40, 41, 42, 44, 46.

874. R. CORYLIFOLIUS Sm., sub-sp. CALCAREUS R. & R., *l.c.* 15. East Gloster.

(These Rubi were mainly described by Rev. W. M. Rogers in MS. They are now published by Mr Riddelsdell under their joint names.)

887 (3). FRAGARIA INDICA Andrews Bot. Rep., t. 479. Alien, hortal, India, etc. Near Lymington, Lady DAVY. Doubtless a garden escape.

909. The following Alchemillas were described by Mr C. E. Salmon in *Journ. Bot.* 222, 1925. They are the minor species which have been elaborated by M. Buser of Geneva who, at his request in 1892, had many of my specimens for examination. I still await their return.

A. CURTILOBA Buser. Goathland, N.-E. Yorks, v.-c. 62, 1895. Miss M. MENNELL. Det. Dr JACQUET. A form closely allied to *pratensis.*

A. SUBCRENATA Buser in Magnier Scrinia Fl. Select., fasc. xii., 285, 1893. Aviemore, Easterness, v.-c. 96, 1922. C. E. SALMON. Det. Dr JACQUET. It has affinity with *A. minor.*

A. TENUIS Buser in Bull. Soc. Bot. Suisse, iv., 76, 1894. Meall Greigh, v.-c. 88; Sow of Athol, Dalnaspidal, v.-c. 89; By the Spey, Aviemore, etc., v.-c. 96. Det. Dr JACQUET. Near *minor* Huds., var. *filicaulis* Buser.

A. CONNIVENS Buser. By a stream near Dalnaspidal, v.-c. 89.

2500 feet, C. E. SALMON; Beinn a Chroin, Glen Falloch, v.-c. 88, 1914, E. S. MARSHALL. Det. Dr JACQUET.

A. FIRMA Buser. Ben Lawers, v.-c. 88. Recorded as *acutidens* in 1913 by C. E. SALMON. Det. Dr JACQUET.

1067 (2). OENOTHERA CATHARINENSIS Camb. Alien, temperate S. America. Avonmouth Dock, W. Gloster, 1923, N. SANDWITH.

TETRAGONIACEAE Link Handb. ii., 17, 1831.
(*Mesembryaceae* Lindl. Veg. Syst., 1836. *Ficoidaceae* Rohrb. in Mart. Fl. Bras. xiv., 2, 207, 1872; Gen. 315, 1789.)

Mr N. E. Brown's exhaustive study of the genus involves many name changes in plants which have been recorded as more or less established in Britain.

208. MESEMBRYANTHEMUM (Dill.) L.
(Fruit 5 celled. When wetted opens by 5 valves: there are corresponding differences in the number of stigmas and ovarian cells.)

1077. M. CANDENS Harv. S. Africa. Newquay, Cornwall.

1077 (2). M. FALCATUM L. S. Africa.

1077 (3). M. GLOMERATUM L. S. Africa.

208 (2). CARPOBROTUS N. E. B. in *Gard. Chron.*, 1925.
(Fruit indehiscent, 10-16 celled.)

1077 (4). C. EDULIS (L.) N. E. Br. Cape. Yellow flowers.
Var. RUBESCENS Druce. Red blossom.

1077 (5). C. AEQUILATERALIS (Harv.) N. E. Br. Australia. (M. VIRESCENS Harv. M. AEQUILATERALE L., and probably British ACINACIFORME. True *acinaciforme* has much thicker leaves.)

208 (3). CRYOPHYTON N. E. Br.
1077 (6). C. CRYSTALLINUM (L.) N. E. Br.

1114. PIMPINELLA SAXIFRAGA L., under var. POTERIIFOLIA Wallr. A rather fleshy maritime form on the cliffs near Holyhead, Anglesey, Hon. Mrs BARING and G. C. DRUCE. So much off type as to be named by a critical authority, *P. major*. G. C. DRUCE.

1166 *b*. CAUCALIS DAUCOIDES L., var. MURICATA (Bisch.) G. & G. In July 1922 my mother and I discovered a single specimen of this remarkably distinct-looking plant on railway sidings near Shirehampton, W. Gloster. Its occurrence in England even as a casual seems worthy of note, if only because of the position which *C. daucoides* itself has always maintained in our manuals by virtue of its once well-deserved claim to the status of colonist. *Muricata*, the origin of which was unknown to its author, Bischoff, is quite well known on the Continent as a plant of cornfields, often growing with *daucoides*, but evidently always much scarcer than that species. It occurs mainly in Central Europe in a rather clearly-defined area bounded on the north by Bohemia, on the east by Croatia and Slavonia, on the south by Gorizia and the province of Venice in N.E. Italy, and on the west by the Tyrol. Within this area it seems most at home in Lower Austria where it is recorded by Neilrich from a number of localities. The plant has, however, been found at a great distance to the east, being noted by Ledebour from Tauria and the provinces of the Caucasus. It is also known in France, but is there ‘ bien plus rare ’ than *daucoides*, nor had Thellung got it as an alien at Montpellier where he wrote his *Flore Adventice* in 1912, though Gautier seems familiar with it in the Eastern Pyrenees. No mention of the plant is made by Coste, Archangeli, Boreau, Gremli, Halacsy, or Willkomm and Lange. There are four sheets at Kew, comprising specimens from the Tyrol, Lower Austria, Hungary and Gorizia; three at the British Museum, from Lower Austria and Hungary. The obvious distinction of *muricata* from *daucoides* lies in the fruit, in which the spines on the secondary ridges are uniformly so reduced in size as to give the appearance of whitish granules, totally unlike the well-known spines on the fruit of *daucoides*. On closer inspection these granules are found to be cylindrical stumps which turn up abruptly at right angles into a short straight point. Owing to the minute size of these processes, the whole surface of the fruit is exposed in a manner that is never visible in *C. daucoides*, in which the long spreading spines equal or exceed the diameter of the mericarp, and are subulate in shape, tapering very gradually into a hook. For the same reason, *muricata* naturally stands a far poorer chance of spreading from its home to other countries. This character of the fruit was very well defined by Bischoff who, in 1839, described his plant as a species in the Heidelberg Seed Catalogue, the description being republished in 1840 in *Linnaea*, xiv. The subsequent treatment of the plant is quite interesting. In 1843 Koch gave an excellent description of it as a species in his *Synopsis*, ed. ii., and in the following year Ledebour gave it the same rank in the *Flora Rossica*, and emphasised the distinction in the shape as well as in the size of the spines on the fruit. Grenier and Godron were the first to reduce it to varietal rank under *C. daucoides* in their *Flore de France* in 1848, but in 1859 it reappeared as a species in the *Flora von Nieder-Oesterreich* and the author Neilrich commented as follows: "Completely similar to the preceding (*C. daucoides*) in habit, but easy to distinguish by the very short spines of the secondary ridges, which resemble more a row of tubercles. A very doubtful species, related to *C. daucoides*, as *Ranunculus tuberculatus* is to *R. arvensis*. Since, however, I have hitherto found no intermediates, and the same plant remained constant in cultivation for a succession of eight years, I have been unwilling to combine them." These remarks are quoted by the younger Reichenbach who, in 1867, placed *muricata* under *daucoides* in his *Icones*, and figured both the plant itself and a transverse section of the fruit. Two years later, however, the plant still appeared as a full species both in the *Flora Croatica*, and in De Visiani and Saccardo's *Catalogue of Venetian Plants*. After this all authors seem to have combined to follow Grenier and Godron's precedent, and *muricata* is reduced by such writers as Boissier, Parlatore, Fiori and Paoletti, and Rouy; and by Nyman and Gandoger in their respective Conspectuses. Meanwhile the *Index Kewensis* mentioned only a *C. muricata* of Crantz (*Classis Umb. Emend.*, 1767) which it identified with *C. daucoides*, but wrongly, for Crantz's plant (*l.c.* 114) came in that section of *Caucalis* which he had taken over from *Daucus*, and is *Daucus muricatus* L. Finally, we come to the latest authority on the Umbelliferae of Europe, Vittorio Calestani, who dealt with the family in 1905 in Webbia, vol. i. He keeps *muricata* "Gren. Godr. et auct. omn." as a variety of *daucoides* but makes the following observation: "Besides the shortness of the spines, *C. muricata* differs in its fruit being shorter and broader, and is perhaps a good species." This observation holds good at least with the breadth of the fruit, and it is curious that Calestani confines his attention to dimensions, and omits reference to the distinct shape of the spines which was so carefully described by Bischoff, and which led authors to retain the plant as a species for no less than thirty years. Perhaps they thought that the difference in shape was entirely conditioned by the reduction in size, an hypothesis which does not in this instance appear to be by any means inevitable, in spite of Neilrich's analogy of the two Ranunculi, and others which might easily be produced. At any rate, it seems that he might well have expressed his concluding words in still stronger terms, and that *muricata*, if carefully studied in Central Europe, may merit restoration to its original rank. N. SANDWITH.

1192. GALIUM BOREALE L., nova forma DIFFUSUM. Large spreading plant, with broad panicles, leaves narrowly ovate, attenuated to a point. Callander, W. Perth, 1925. G. C. DRUCE.

284. BACCHARIS L.

1284 (10). B. HALIMIFOLIA L. Alien, America and West Indies. This shrubby Composite was found at Mudeford, S. Hants, by Mrs ROTHWELL in 1924, and sent to me by Mr J. F. Rayner.

1394. SENECIO JACOBAEA L., nov. var. ABROTANOIDES Murr in litt. Foliis tripinnatipartitis. This pretty plant, with very compoundly divided leaves, occurred on the sea coast of Western Ross-shire between Poolewe and Dundonnell, August 1925. G. C. DRUCE.

1495. CREPIS DRUCEANA Murr. Verisimiliter *C. biennis* × *capillaris*. Ramificatis et folia ut in *C. capillaris;* squamae obscure subglabrae basim versus percissime floccosae; capitula tripla, majora; ligulae apice rubrostriatae. Murr, ined. x., 1923. Frilford, Berks, G. C. DRUCE.

1505. HIERACIA of the London Catalogue. Rev. J. Roffey (*Journ. Bot.* 315, 1925) gives some names new to our list used by Zahn in Das Pflanzenreich. They include H. SKYENSE Zahn (near *anglicum*, itself cut up into several species); H. JOVIMONTIS Zahn

(Linton's No. 9 as *Schmidtii*); H. BASICRINUM Zahn (*Somnerfeltii*, var. *tactum* F. J. H.); H. PSEUDO-LEYI Zahn; H. EXOTERICUM Jord. (Linton No. 37 as *pellucidum*); H. KILLINENSE Zahn (Linton's No. 17 as *microcladium*); H. SCANDINAVIORUM Zahn (Linton's No. 38 as *sylvaticum*); H. LANCEOLATUM Vill.; H. GOTHICIFORME Dahlst.; H. BACKHOUSEANUM Zahn (Linton's No. 77 as *gothicum* forma *latifolium*); H. LATOBRIGORUM Zahn; and H. STRICTIFORME Zahn. The Rev. J. Roffey gives a useful clavis to the Subauda. Zahn in his Monograph gives 42 British species only, the others coming in as subspecies.

1645. TARAXACUM. A paper by S. B. DICKS (*Gard. Chron.* ii. 253), with fig. 102, shows a field of cultivated Dandelions with women collecting the fruits of a cabbage variety on the farm of Mr L. Clause, Bretigny-sur-Orze. The author does not seem to be aware of the scientific works on the Dandelion by Handel-Mazzetti and Dahlstedt.

1645. T. MIMULUM Dahlst., *l.c.* B. 8, n. 10, 1910. Skand. Elton, Hunts, 1925, G. C. DRUCE. A robust plant.

1645. T. LITORALE Raunk. Dansk. Exkurs.-flora, 1906. Skand. Yarnton, Oxford, 1924, G. C. DRUCE, as a var. of this species, teste DAHLSTEDT.

1645. T. PALLESCENS Dahlst. A plant allied to this. Oxford. 1925, G. C. DRUCE, teste DAHLSTEDT.

1645. T. PRIVUM Dahlst. Nya Ostsvenska Taraxaca. Arkiv. for Bot., B. 10, n. 6, 1911. Skand. Oxford, 1924, and as a var., G. C. DRUCE.

1645. T. AMBLYCENTRUM Dahlst. Vasts. Tarax. Arkiv. for Bot., B. 10, n. 11. For description see *Report* 1911, p. 37-40. Finland, Skand. Oxford; Teesdale, Durham, 1925. G. C. DRUCE. A large, stout plant with long narrow side lobes.

1645. T. MACROLOBUM Dahlst. Vasts. Tarax. 43. Arkiv. for Bot., B. 10, n. 11. See *Report* 1911, p. 43. Allied to this is a striking plant from Balta, Unst, Zetland, 1920, G. C. DRUCE.

1645. T. LACINIOSUM Dahlst. Vasts. Tarax., *l.c.* See *Report* 1911, p. 45. A plant very nearly allied to this from Oxford, G. C. DRUCE.

1645. T. HAEMATOPUS Lindb. f. in Act. Soc. pro Fauna et Fennica 29, n. 9, 1907. Skand. A form of this at Yarnton, Oxford, 1923, G. C. DRUCE.

1699. ERICA VAGANS L., var. KEVERNENSIS Turrill. This continues to be a most popular heath. (See *Gard. Chron.* ii., 468, 1925.) It was discovered by Mr P. D. Williams. A pure white variety is also grown, known as Lyonesse.

1705. LEDUM PALUSTRE L. Arth. Bennett (*Journ. Bot.* 148, 1925) gives its history as a Scottish plant. My reference to *Ledum* growing under trees said under alien trees. When I saw it it was over 20 years old, and was a mere fragmentary specimen. The flowering time in Sweden is June and July, so the suggestion that its early flowering led to its being so long unnoticed in Scotland can scarcely be urged seriously. Mr Bennett does not allude to the other isolated localities in the Glasgow area and Yorkshire. Mr F. J. Stubbs (*l.c.* 178) records the plant growing on Soyland Moor between Rochdale and Halifax on the line dividing Lancs. and Yorks. at 1000 feet altitude, nearest house a mile away. First noticed in 1917 by F. Taylor. It has only once flowered there.

386 (2). CLETHRA L.

1711 (2). C. ALNIFOLIA L. Alien, America, etc. In a swampy field between Clulworth and Shirley Warren, S. Hants, 1921, RAYNER.

1751 (11). BUDDLEIA LINDLEYANA Fortune. Alien, China. On rubbish at foot of cliff near St Laurence, at 20 feet high, 1923, LONG ex RAYNER.

1765. GENTIANA CAMPESTRIS L. An albino mutant was found in the Val d'Isère, Savoie, on five occasions in quite separate localities of groups of albinos. One of these groups had well over 1000 individuals. Round this patch was a zone apparently unsuited to its growth. JULIAN S. HUXLEY in Nature ii. 497, 1925.

418 (3). ALLOCARYA Greene in Pittonia i., 12, 1887.
(? *Plagiobothrys* Fisch. & Mey.)

1785 (3). A. STIPITATA Greene. Alien, Amer. bor. Port Meadow, Oxon, 1925, T. GAMBIER PARRY.

1789 (7). BENTHAMIA PARVIFLORA (Haller under AMSINCKIA) comb. nov. On the railway between Reading and Sonning, Berks, 1925, ARNOLD COBB. Det., with a query, A. THELLUNG.

1819. MYOSOTIS ARVENSIS Hill, var. STRICTA Bosch. is the name suggested by Wade for the plant collected by me at Hanslope, Bucks. G. C. DRUCE.

1850. SOLANUM SISYMBRIFOLIUM Lam. Alien, N. America, Mexico, Brazil. Waste ground, Bournemouth, S. Hants, Rev. C. A. S. HATTON, ex RAYNER.

1873. LINARIA LINARIA (L.) Karst., nov. var. vel. forma FOLIOSA Druce. Cardiff Docks, Glamorgan, 1924, R. L. SMITH.

1886. L. CYMBALARIA Mill. In a lecture before the Pharmaceutical Society on December 13, 1924, on The Nature and History of this British Flora, Dr E. G. Salisbury stated that Dillenius brought the seed from Italy to the Botanic Garden. I have no evidence that Dillenius was ever in that country. As a matter of fact it was grown in the garden long prior to Dillenius who came there in 1734 since it appears in our Garden Catalogue of 1658 under the name of *Cymbalaria Italica*.

1892. SCROPHULARIA AQUATICA L., nov. var. ANGUSTIFOLIA. Differs from the type in the narrow leaves which are coarsely and irregularly crenate, the blade about 4 in. by ⅞-1 in. at broadest part, narrowed to the apex; peduncle of lower leaves 4 inches long. Near the Nidd, Knaresborough, York, 1911, Miss TODD. G. C. DRUCE.

[1931. NORWEGIAN EUPHRASIA. K. JORGENSEN in Bergens Mus. Aarbok, 1916-7.

(A) Glands staked.
  (1) Glands numerous.
    (a) Glands short; flowers large; corolla 8 mm. long (longer or shorter): bracts awned; corolla-tube, during flowering, at least 1 mm. long (an early summer form is *tenuis*). .... *E. brevipila.*
    (b) Glands long, relatively small-headed; bracts not clearly awned: corolla-tube, during flowering, about 1.5 mm. long (an early summer form is *montana*). .... *E. Rostkoviana.*
  (II) Glands very few, short.
    (aa) Large flowered, similar to *E. latifolia* in N. Norway. *E. hyperborea.*
    (bb) Small flowered. .... *E. latifolia.*
(B) Stalked glands absent except sometimes on corolla.
  (1) Flowers large, 8 mm. or longer.
    (a) Late summer forms.
      1. Fruiting calyx not or little enlarged, with long narrow teeth. ...... *E. stricta*, sub-sp. *eu-stricta.*
      2. Fruiting calyx much enlarged, with large broad teeth. .... *E. borealis*, sub-sp. *sub-brevipila.*
    (b) Early summer forms.
      1. Corresponding to *E. stricta.* .... Sub-sp. *E. suecica.*
      2. Corresponding to *E. borealis.* .... Sub-sp. *E. atlantica.*
      3. Similar to *E. latifolia.* Leaves and bracts with a more or less wedge shaped base. .... *E. hyperborea* in Norway.
  (II) Small flowered, corolla 7 mm. or longer.
    (a) Capsule glabrous on the edge or with short hairs. ... *E. salisburgensis.*
    (b) Capsule with numerous hairs on edge.
      (1) Fruiting calyx almost smooth.
        (aa) Plant of purplish or dark green colour.
          (1) Under lip longer than the upper. Late summer forms. *E. micrantha.*
          (2) Under lip about as long as upper. Moor forms, western hills. .... *E. scotica.*
          (3) Alpine plants. .... *E. minima*, var. *palustris.*
        (bb) Green or golden green. Corolla only 3.5. .... N. Norway *E. latifolia*, var. *inundata.*
      (2) Fruiting calyx more or less strongly hairy.
        (a) Early summer types. Seeds large, 1.5-2 mm. long. Alpine or northern plants.
          (aa) Capsules elliptical. .... *E. minima.*
          (bb) Capsules narrow, oblong. ... Large N. Norway *E. latifolia.*
        (b) Late summer type. Seeds small, about 1 mm. Generally hairy. *E. curta.*]

1966 (2). OROBANCHE RETICULATA Wallr., var. PALLIDIFLORA W. & G. Near Llandowey, Brecon, June 1905, H. H. KNIGHT, ex A. BENNETT. Det. by BECK.

1974. LATHRAEA CLANDESTINA L. J. L. North (*Quart. Rep. Royal Botanic Society*) states that its seeds are propelled 27 feet when the capsules are pressed. This he thinks may explain its spreading from the roots of a Beech tree to other parts forty feet away. He alludes to the fact, originally mentioned in our Report, that I found specimens of it at Livermere 40 feet away from the place where Lady de Sausmarez planted it several years previously. This year I was unable to find it in June.

468 (5). Lippia L.

1983 (5). L. nodiflora Michx. Fl. Bor. Amer. ii., 15. Alien, hortal. Beaulieu Abbey, S. Hants, Long, ex Rayner.

1986 (5). Verbena paniculata L. Alien, N. America. Waste ground, Christchurch, S. Hants, 1923, ex Rayner.

2057. Stachys palustris L., f. cleistogama. Kingswood, Bristol. Mr Sandwith sent a curious form, but with laxer habit and broader (but mostly sessile) leaves than type and cleistogamous flowers.

2079. Teucrium Scorodonia L. An interesting example of chloranthy, Woodland, Howth, Co. Dublin, September 23, 1925, Miss I. M. Roper.

2082 (3). T. spinosum L. Alien, S. Europe. An annual, very prickly species, found at Bristol, 1925, C. and N. Sandwith.

2082 (4). T. resupinatum Desf. Alien, Spain. Bristol, 1925, C. and N. Sandwith. A very local annual species recorded from Baetica and Castille with yellow corolla and twisted resupinate tube.

2083. Ajuga reptans L. A stolonless form found in Unwell Wood, Berks, by Miss Todd, 1923. So much off type as to be named by one expert *pyramidalis*, by another *genevensis*.

2090. Plantago Coronopus L., nov. forma glabrescens. Noticed by myself and Mr G. C. Brown on Hythe Quay, Colchester. Conspicuous from its bright green, succulent, glabrescent foliage, September 1925, G. C. Druce.

Nov. var. (or lusus) ramosa. Stem bearing one spike from the base of which 3 or 4 stalked spikes arise almost equal in length to the main stem making an umbellate inflorescence. Found by Mr L. Medlin at Par, Cornwall, 1925, G. C. Druce.

2099. P. major L., var. (or lusus) bracteata. Differs from the type in having foliaceous bracts at the base of the spike gradually diminishing in size upwards; leaves very large, roughly waved on the margin. Wytham, Berks, 1914, G. C. DRUCE.

2124. CHENOPODIUM ALBUM L., forma GROSSEDENTATA Murr in litt. This strongly toothed form was found at Colchester, Essex, 1925, by G. C. DRUCE and Misses TROWER.

[2126. C. FICIFOLIUM Sm., var. MICROPHYLLUM Murr in litt. Leaves small. Luxor, Egypt, 1925, G. C. DRUCE.]

2127. C. GLAUCUM L., var. MICROPHYLLUM Murr in litt. Leaves narrow, small. Port Meadow, Oxford, 1925, T. GAMBIER PARRY, teste MURR.

2131 (15). C. DETESTANS J. Kirk in Trans. New Zealand Inst. ix., 550, 1877. Alien, New Zealand. Charleston, Cornwall, August 1925, W. TRESIDDER. Dr Murr remarks " huic proximum. sed vidi hujus speciei unum tantum specimen non bonum."

2133. C. SUBPALMATUM (nova sp.) Murr in litt. Valde verisimiliter semiorphanum ex *C. atriplicis* L. f. et *C. albo* (ut e.g. *C. auricomiforme* Murr et Thell., cujus parens altera *C. auricomum* Lindl. nondum in Europam introductus). Planta pulchra, robusta, caule et foliis valde purpurascentibus, foliis latis subtriangularibus inciso-lobatis. *Chenopodio pseudo-Borbasii* Murr (*album-striatum*) valde simile sed omnibus partibus robustius, viridibus, magis purpurascens, foliis basi latioribus, fortius lobatis, inflorescentia valde alba farinosa ut in *C. atriplicis*. Asia, Orient. Found by G. C. DRUCE and G. C. BROWN at Colchester in 1925. I thought this handsome plant, which was barren, was an ally of *striatum* but it was only a leafing specimen. Mr G. C. BROWN could find only immature flowers on the first of November. G. C. DRUCE.

2175. POLYGANUM PERSICARIA L., var. nova MACULIS INSIGNIS Danser. Exeter, Miss TODD; Port Meadow, Oxford; Eye, Northants. This is the form with the leaves conspicuously black-blotched, which gives the plant one of its local names in Oxfordshire. The legend is that the mark was made by the Virgin Mary when she pinched the leaf and condemned it as worthless. (Hild. Friend *Flowers and Flower Lore*, p. 6.)

2176. P. PETECTICALE (Stokes) Druce, var. LANCEIFOLIUM (Danser). Botley, Oxon, [Z 1041], 1922. In a former *B.E.C. Report* it appears as *P. maculatum*. Danser named it *P. lapathifolium*, sub-sp. *nodosum lanceiforme*, var. *glabrulum punctaticaule rubellum*. It is one of the many forms of Trimen and Dyer's sub-sp. *maculatum*. The earliest trivial is *pectecticale*.

2176. P. [LAPATHIFOLIUM] TOMENTOSUM Schrank, var. MEOMORPHUM-SEMILANCEIFOLIUM Danser. Colchester Sewage Farm [2233]. 1924, G. C. BROWN.

2196. RUMEX LONGIFOLIUS DC. vel DOMESTICUS Hartm. × OBTUSIFOLIUS. Weem, M. Perth, Miss TODD; Grantown, E. Inverness, G. C. DRUCE. This is not *conspersus* which is a cross with *R. aquaticus*, and is not at present known as British. This may be named × *R. Arnottii* since Walker Arnott first pointed out in Britain its true parentage. Syme (*E.B.* viii., 49), as it appears, wrongly referred it to *conspersus*.

2200. R. OBTUSIFOLIUS L., var. UNIGRANIS (Danser). Bodorgan, Anglesey, G. C. DRUCE. Prof. Danser put it as a variety of sub-sp. *agrestis* Fr.

2207. × R. KLOOSII Danser. See *Rep. B.E.C.* 452, 1924. This plant was found for the first time in a wild condition on Blackheath, E. Kent, in 1920, by Mrs GERTRUDE BACON. It is a hybrid of the alien *R. dentatus* with *R. maritimus*. The cross may have originated out of Britain, as the plant is an adventive.

520 (5). MUEHLENBECKIA Meissn. Gen. 316: Comm. 227. 1840.

2211 (10). M. COMPLEXA Meissn. Alien, New Zealand. Naturalised on rocky slopes in several places at St Saviour's, Jersey, August 1925, L. ARSENE.

2214. DAPHNE LAUREOLA L. See *Gard. Chron.* 145, 1925, fig. 56, also p. 73, where the figures seem to be *pontica*. Discusses the fragrance said to be present in *Laureola*. Mr W. J. Bean believes some plants are scentless, but other plants are fragrant at times. On p. 218 it states that *Laureola*, moved from a beechwood in Hamp shire where it was fragrant to an ornamental wood in North Yorkshire, and planted on a deep, rather heavy loam, became scentless. Plants at Marlow in Bucks and Hertford were fragrant. See fig. 88. Fig. 89 represents *pontica* which has the corolla division longer and more pointed.

2250. URTICA DIOICA L., forma VILLOSA. Foliage clothed with villous hairs. Finstown, Orkney, 1920; near Fitful Head, Zetland, G. C. DRUCE.

Lusus FOLIOSA. Inflorescences converted into small leaves. Swanwick, Derby. Sent me by the Rev. W. WRIGHT MASON.

Gen. 542. QUERCUS.
Sub-section 1. SUBER.
"Fruit ripening in a single summer."
Sub-section 2. AEGILOPS.
"Fruit taking two summers to ripen."
Cambridge British Flora, vol. ii., p. 72.

It looks to me as if these definitions had been transposed. I cannot reconcile the statements with my own experience of many years' observation of numerous trees of Evergreen and Turkey Oaks growing on this property. On the contrary the exact opposite seems to be the case.

2264. Q. ILEX L. (Evergreen Oak).

What I suppose to be the typical Evergreen Oak has rather narrow, entire, lanceolate leaves with slightly revolute margins. They are dark green and shining above and whitish underneath. We have some fine old trees which freely produce fruit. The small acorns are long in ripening and are firmly fixed to the long peduncles which carry two or three together. In winter it is a daily sight to see jackdaws and ring-doves busily engaged trying to pull them off the trees. Rooks and jays also feed upon them and before the disappearance of squirrels from this neighbourhood they also used to frequent the trees and devour the acorns. Now (9th October 1925) from some cause one large tree is shedding its undeveloped acorns and their stalks in great quantity. The ripe acorns which fall from the trees sometimes come up but the birds do not leave many. The oak flowers late in May or early in June when the old

leaves fall off. Long straight shoots occasionally arise from the base of the trunks of old trees which bear much larger leaves of quite a different shape from those of the rest of the trees, being broadly ovate, slightly toothed and green on the underside. The suckers also have very different leaves from those of the main tree as have also the shoots that spring from the stumps of trees that have been cut down (just as in *Populus*). There are several varieties growing here. Some have broadly-ovate, lanceolate leaves slightly toothed towards the apex; another has very broad ovate leaves—the margins strongly toothed (a tooth to each of the lateral veins) each tooth ending in a sharp spine. They are very shining above and light green underneath. This kind comes up in one of the plantations, sometimes at the root of some large tree probably dropped by birds. These plants are small scrubby shrubs or sometimes small trees. They may perhaps be the Holly-leaved Oak (*Q. gramuntia* W.) or they may belong to a distinct species and are not a variety of the Common Evergreen Oak. Another variety (?) has long lobed leaves, very white on the underside with sessile acorns. Many varieties seem to have been known to Loudon and other Victorian botanists and also the great variation in the form of the leaf of *Q. Ilex.* I wonder they were not mentioned in *Camb. Brit. Fl.*
Turkey Oak (*Q. Cerris* L.).

No mention is made in *Camb. Brit. Fl.* of the numerous varieties and hybrids of this oak. The famous " Lucombe Oak," originating in the Alphington Nurseries near Exeter at the end of the 18th or beginning of the 19th centuries, and the " Falham Oak " are not even alluded to. They retain their leaves up to Christmas and in a more or less withered state throughout the winter, shedding them in the spring.

I think one of our trees, planted in 1838, is a Lucombe Oak (*Quercus Cerris*, var. *exoniensis* Loud.). It is a fine tree but rarely or never ripens its acorns. The immature fruit resembles that of the Turkey Oak as far as relates to the cupule, but the nut is short and round. The largest known example of this variety or hybrid is at Killerton, near Exeter, and the late Sir Thomas Acland showed it to me with great pride in July 1914, and pointed out how he had had it bricked up and cemented at the base of the trunk when decay set in. Sir Thomas gave me the dimensions. It was 14 feet in circumference at 3 feet from the ground. There were also two other hybrid oaks at that famous place (owned by three Sir Thomas Aclands in succession and all fond of trees). One of these oaks, both fine trees, was grafted on a Cork Oak and the other on a Common Oak. That on the Cork Oak had corky bark and keeps its leaves till the young ones push them off in spring. The other, grafted on the English Oak, sheds its leaves in February or March, as I was informed by Mr Wilson, the head gardener.

We have a lot of hybrid Turkey Oaks growing in our small wood with very straight trunks drawn up to a great height and of considerable size. The timber is of poor quality and in some the scent of tannin from the bark and wood is so powerful and offensive that it is of no use as firewood. They retain their leaves quite green during the winter months, shedding them in spring. They do not produce ripe acorns. The leaves vary greatly in form and in the amount and depth of lobing, some being very long (9 inches) and narrow. These trees are so straight and lofty I have to depend on such twigs as are blown off for material for examination. The acorns do not seem to mature but those undeveloped ones I have found resemble the Turkey Oak, but the scales of the cupule are rather stiffer and stronger. W. S. M. D'URBAN.

2265 (2). JUGLANS REGIA L. Mr Douglas T. Thring reports in *Quart. Journ. Forestry*, October 1925, p. 304, a remarkable walnut tree at Cuxham near Oxford, 106 feet in height with a trunk 17 ft. 4 in. in girth at five feet from the ground. This is the largest walnut tree ever recorded in England. A. HENRY.

2276. SALIX AURITA × CINEREA f. OLEIFOLIA. Heath, north of Woking town, Surrey, 1925, J. FRASER.

2325. ORCHIS LATIFOLIA L. Mr T. A. Dymes writes, October 10, 1925, that he has three plants of this from which his seeds were taken. They flowered nicely this year, and the leaves did not lose their spots. The seeds are quite different from any of the *maculata* group, but are very like *praetermissa*, and mixed seeds would be difficult to separate. He thinks *O. O'Kellyi* is more distinct from *maculata* and *Fuchsii* than they are from one another.

2326. O. PRAETERMISSA Druce. Messrs Stephenson (*Journ. Bot.* 93, 1925) record finding this in three localities near Paris so it is now known for Holland and France.

2327. O. O'KELLYI Druce. In *Gard. Chron.* ii., 48, 1925, Mr Besant of Glas-nevin says that it is a beautiful plant but only an albino of *maculata.* This may be so on the standard that " all flesh is grass," but it is not the case here since the researches of Mr Stelfox and other Irish observers tend to prove its distinctness from *O. Fuchsii.* It is very widely removed from *maculata* which has an albino form.

2390 (2). ASPHODELUS TENUIFOLIUS Cav. in Anal. Cienc. Nat. iii., 46, 1801. Alien, Southern India. Balls Bridge Coups, Dublin, 1924, R. GRIERSON. Det. at Kew.

2406 (3). ALLIUM MOLY L. Alien, S. Europe. Rare, hortal. In cultivation since 1604. Swaton waste field, Great Hale, Sleaford Fen, Lincoln, Miss LANDON.

2479 (2). SAGITTARIA HETEROPHYLLA Pursh and POTAMOGETON FOLIOSUS Raf. Attempts have been made to account for the presence of two North American water plants, *Sagittaria heterophylla* Pursh and *Potamogeton foliosus* Raf. in the River Exe at Exeter. It has been suggested that they were introduced with the bark of large trees and brush-wood used for lining the interiors of the small vessels that had for generations brought salt cod from Newfoundland to Exeter (see *Rep. B.E.C.*, 1923) but Prof. Fernald of Harvard University, Cambridge, Mass., who has for many years been engaged on a Flora of Newfoundland and has lately returned from a collecting trip to that Island, kindly informs us that though the two plants are widely dispersed over the continent of North America, they do not occur in Newfoundland. That being the case the theory that they were introduced from that island is proved to be erroneous. The *Sagittaria* has been cultivated in England under the name of *S. rigida* Pursh since 1806, when it was introduced by Sir Joseph Banks, who received it from Francis Masson from Canada. James Donn gives 1798 as the date of the introduction of *S. bulbosa* Donn, now considered the same species, also from Canada. It is very probable that the well-known nurserymen, Messrs Lucombe and Pince, grew the Canadian Arrow-head in their extensive gardens at Alphington near Exeter and not far from the Exe. As it is a plant that increases with great rapidity by means of its numerous runners or stoles, it is quite possible that the nurserymen disposed of their surplus stock by turning it into the river, or the plant may have obtained access to it by some other means, perhaps by a flood. That it should have for so long escaped notice is not surprising considering that the fully developed leaves bear so close a resemblance to those of *Alisma*, and that the flowers are produced rather sparingly and the whole plant usually much hidden from view from the river bank, except in a few spots. The very long weak flowering scapes bend over and become prostrate on the surface of the water, and the flowers then look much like those of a Water Crowfoot, and might easily be overlooked. It required the critical eye of an expert botanist like its discoverer, the late Mr W. P. Hiern, to detect this alien species. *Acorus Calamus* was also probably introduced to the Exe in the same manner as suggested for the *Sagittaria*. As to the *Potamogeton* the mode of introduction will probably remain unknown like that of another American water-weed, *Elodea canadensis* Mich. which reached the Exeter Canal about 1850. W. S. M. D'URBAN.

2487. POTAMOGETON DRUCEI Fryer. Mr Arthur Bennett (*Journ. Bot.* 149, 1925) asserts that this is synonymous with " *P. petiolatus* Wolfg. (ex Besser) in Roem. and Schult. Syst. Veg. Mant. 3, 352. 1827." He says his specimen is from " Wilna (Lithuania) leg. Wolfgang ex Dr Reichardt Herb. Mus. Vind.," given him by the late Dr Tiselius. In the *Mantissa* it is given as " Wolfg. MSS. No. 4, Besser in litt." and placed under *polygonifolius*. Bennett says it agrees with my Loddon specimens. He has it also from Grève du Rhone au dessus de Lyon, and from Denmark. Herr Baagoe in " amne Gudena ad Kongensbro." But Hagstrom (*Researches* 184) refers the *petiolatus* Wolfg. Lithuanian specimens from Wilna to *P. nodosus*, and he also had Baagoe's Gudena specimens before him. These he referred to *lucens* × *nodosus*. This was done while he was making an intensive study of *P. Drucei*, which he refers to *alpinus* × *natans* (as I first suggested). It must be borne in mind that *petiolatus* is published as a *species.* Unfortunately the *Actes* allow the name to be changed when a different grade is employed and, therefore, while putting it into the hybrid grade, Fryer (*Brit. Pondweeds* 31, 1915) was entitled to change its name as he did. Of course he knew nothing of Wolfgang's plant or whether or not it was identical with the Loddon plant. In the case of *P. nerviger* Wolfg., supposing as Hagstr. (*l.c.* 149) says, this is identical with *P. Griffithii* Benn., published as a distinct species, obviously, there being no change of grade, the more recent name falls. Hagstrom says of the Welsh plant " its hybrid origin, however, is beyond all doubt and may nowadays be disputed in earnest by nobody."

2508 (2). P. FOLIOSUS Raf. Professor M. L. Fernald, in a letter to Mr D'Urban, says that *Potamogeton foliosus* is a generally distributed species from tropical America northwards, reaching its north-eastern limits in Nova Scotia, Prince Edward Island, and in Quebec south of the St Lawrence. *Sagittaria heterophylla* is one of our most protean species, and its eastern limits are in Lake Champlain in Vermont and in river estuaries as far east as southern Maine, but there is no evidence of the occurrence of either species in Newfoundland. Nor is there any evidence of the Hemlock Spruce being found in that country. Again *Calluna* is of very doubtful occurrence in Newfoundland although it has been recorded. The plant, when examined, proved to be *Empetrum.* Consequently the assumption that either the *Sagittaria* or *Potamogeton* were introduced into England from Newfoundland by clinging to *Calluna* or to the bark of the Hemlock Spruce is based upon a very unfortunate misapprehension as to the American occurrence of the four species concerned.

2514 (2). P. PENNSYLVANICUS Willd. In the *Potamogetons of the British Isles* the statement is made that this species was " most likely introduced with cotton, as it is one of the common species in the United States, being abundant in the States where cotton is grown." Prof. M. L. Fernald writes that the above statement amazes him since " *P. pennsylvanicus* is, so far as we know, quite unknown from the cotton-belt, the latter region being a fairly well defined area of the Southern United States; the pondweed being an essentially northern species occurring in two areas—one extending from southern Labrador to the mountains of northernmost Georgia, the other along the Pacific slope from Alaska to California." Therefore to some other cause must be attributed its occurrence in Yorkshire.

2529. **Eleocharis palustris** Br. is a very polymorphic species. Beauverd in Bull. Soc. Bot. Genev. 245, 1921, gives the following clavis :—

1. Plant deep green. .... 2.
   Plant glaucous or yellow green. .... 6.
2. Stems 20 cms. or more. .... 3.
   Stems scarcely 10 cms. .... 5.
3. Plant 20-40 cms. tall with broadly lanceolate spike. .... *Type*.
   Plant less high. .... 4.
4. Stem 40 cms. or more, spike narrowly lanceolate. ...... Var. 2, *major* (Sond.).
   Stem less thick, reaching 90 cms. .... Var. 3, *Caspary* Abr.
5. Stem more or less 10 cms. high; spike ovate, more or less elongate. .... Var. 4, *arenarius* (Sond.).
   Stem more than 10 cms.; spike lanceolate. .... Var. 5, *minor* (Schur).
6. Plant clear green or more or less yellowish green. .... 8.
   Plant glaucous green. .... 7.
7. Spike lanceolate, more or less elongate (as in type save colour). .... Var. 6, *glaucescens* (Willd.).
   Spike very short, more or less 3 mm. long: stolons short, bracts lanceolate, pale. ... . Var. 7, *filicaulis* (Schur).
8. Plant yellow green, with much broader stolons, stem more or less 10 cms.; spike lanceolate. .... Var. 8, *salinus* (Schur).
   Plant clear green; stems above 15 cms.: spike surrounded at base by a solid amplexicaul bract. ... . Sub-sp. *E. uniglumis* (Link).

The difficulty arises in nature that the height of the stems is much influenced by surroundings and so far as *uniglumis* (which C. E. Clarke thought was a mere form) is concerned is quite unreliable.

H. Lindberg (Act. Soc. Faun. et Fl. Fennica xxxiii., 7, 1902) suggested a third species, with the clavis :—

1. Sterile bract not surrounding the spike, the fruit not punctate. .... 2.
   One bract only surrounding the base of the spike; fruit visibly punctate verrucose. .... 1. *uniglumis*.
2. Stem dark green, rigid and striate when dry, 20 fiber-bundles, stylopode longer than broad. .... 2, *palustris*.
   Stems clear green, flabby, with 12 fiber-bundles, stylopode broader than long. *mamillata* (Lind.).

Dr Beauverd describes a new species, *E. benedicta*, and a new variety of *E. uniglumis*, var. *macrocarpa* Beauv., the latter from the neighbourhood of Paris at St Gratien.

2548. ERIOPHORUM ANGUSTIFOLIUM Roth, nov. var. BREVISETUM Druce. Differs from the type in that the robust plants have more or less peduncled spikelets and very short bristles, 10-15 mm. only. Found by Mr T. W. ATTENBOROUGH in a marsh near Petit Port, St John, Jersey in 1925. It was the prevailing form there. It differs from *triquetrum* which has nearly sessile spikelets. G. C. DRUCE.

2551. E. ALPINUM L. Mr W. G. Travis tells me that there is a specimen in Dickinson's Herbarium presented to the Hartley Laboratory at the University of Liverpool. It is labelled "Drumlanrig Castle, Dumfries, R. Boyle, 1840." It is not referred to in the Flora of Dumfriesshire by Scott-Elliot. Can any one throw light on the matter?

2576. CAREX FLAVA × SAXATILIS = C. MARSHALLI Arth. Bennett in Trans. Bot. Soc. Edin. 137, 1925. Argyll, DRUCE; Perth, MARSHALL; Forfar; Aberdeen; W. ROSS. I think my Argyll plant collected in 1888 on Ben Laoigh, cited for above by Mr Bennett, is a hybrid of *flava*, var. *oedocarpa* with *saxatilis*.

2602. C. DISCOLOR Nyland. Spec. Fl. Fenn. iii., n. 12, 1846. *C. aquatilis*, var. *epigeios* Fr. (not Laestr.)—but this seems to be a form of *salina*, teste Nyman, Almquist, etc.

2627 (2). C. MICROGLOCHIN Wahl. in *Proc. Linn. Soc.* p. 2, 1924. There it states that a sheet of specimens gathered by Mr C. E. Salmon in Glen Lyon some years ago was adduced in proof of his having gathered it. This suggests, or it might be inferred, that its discovery was not due to Miss Bacon and Lady Davy. The fact is that Mr Salmon took it, as he said, for a "neat form of *pauciflora*." and he never referred to it as *microglochin* not even in the paper which he read before the Society on plants which might be expected to occur in Britain. Nor in any other way was it published. Lady Davy not only found it, but sent it to me asking if it were not *microglochin* which she made it out to be by her Norge Flora. Its first publication as a British plant was in a supplement to the *Report* in 1921.

2636. PANICUM MILIACEUM L. Proso. The Common Millet. U.S.A. Dep. Agr. Bull., 1433. Largely cultivated in U.S.A. in

Dakotas, Montana, and in Western Canada. It will yield even 60 bushels to the acre. The seed is heavy, weighing 56 pounds to the bushel.

2637. P. MAXIMUM L. Guinea Grass. U.S.A. Dep. Agr. Bull., 1433. Native of Africa, but was early introduced to the West Indies (Jamaica 1756), incidental to the slave trade. It grows as tall as 10 feet, and a single tuft may be 4 feet in diameter. It shows a considerable range of variation. It was found as an alien at Newport and Ryde, Isle of Wight, by Mr LONG, ex RAYNER.

2643. SPARTINA TOWNSENDII H. & J. Groves. F. W. Oliver in the New Phytologist 79, 1925, states that Stapf says that it does not match any American material. The suggested hybrid origin is not supported by its fertility of seed and full-pollen production. Oliver suggests that its occurence in France is due to seeds being taken to that coast by shipping. Perhaps the cytologists may unravel the tangle.

2648. SORGHUM HALEPENSE Pers. Johnson Grass. U.S.A. Dep. Agr. Bull., 1433. Introduced from Turkey into South Carolina about 1830. It is now widely spread across the continent northwards to Virginia, Oklahoma, and Northern California, but it cannot endure great cold. In suitable soil it is apt to become a pest. As an adventive Lady Davy has found it in allotment ground in Surrey.

2651. PHALARIS CANARIENSE L. U.S.A. Dept. Agr. Bull. 1433. In California it has given 10 bushels and in Saskatchewan nearly 30 bushels of seed to the acre.

2655. P. ARUNDINACEA L. U.S.A. Dep. Agr. Bull., 1433. Increasingly cultivated as a fodder-grass in the Northern and Western United States. It yields 6-9 tons per acre. The seeds weigh 44-48 pounds per bushel.

2662. ALOPECURUS PRATENSIS L. U.S.A. Dep. Agr. Bull., 1433. Has been cultivated in the States since 1750. It grows well under shade, and two crops have been obtained in the year. A bushel of seeds weighs from 6-12 pounds, each pound contains from a half to a million seeds.

Nov. var. BULBOSIFORME mihi. Mr G. C. Brown sends specimens from Backwater, Weymouth, Dorset [2337], 1925, which are bulbous at base, the culms somewhat bent at the nodes, the sheaths slightly inflated, but the panicles normal. Babington (*Manual*, ed. 3, 1851) says that " in salt-marshes the base of the stem becomes fleshy and one plant may be mistaken for *bulbosus*." This fact is not mentioned by Knapp, Parnell, or Sowerby.

[TRICHOLOENA ROSEA Nees. U.S.A. Dep. Agr. Bull., 1433. Introduced to the States as early as 1866 it is spreading and is now abundant over the southern part of Florida where its rosy panicles give great beauty. It yields three crops in the year and seeds well in Florida, a bushel weighing 7 pounds. I found it in fields above Caraccas in Venezuela at over 4000 feet, where its beautiful inflorescence was a startling surprise.]

2685. ANTHOXANTHUM ODORATUM L., nov. forma INTERRUPTUS Dr. Inflorescence interrupted; lower internodes separated by 25 mm. Maryborough Coup, Lanark. Collected in 1923 by R. GRIERSON.

2687. A. ODORATUM L. U.S.A. Dep. Agr. Bull., 1433. It was early abundant in North America and now is naturalised right across the continent. It is highly variable. The seed is light, a bushel weighing about 10 pounds, and a pound contains nearly a million (924,000) seeds.

2738. CYNOSURUS CRISTATUS L., nov. forma RAMOSA Dr. Inflorescence compound and interrupted. Mid Perth, Miss TODD.

2752. DESMAZERIA LOLIACEA Nym., nov. forma RAMOSA Dr. St Ouen's, Jersey, Miss M. COBBE. In this the inflorescence is compound.

2761. POA TRIVIALIS L. U.S.A. Dep. Agr. Bull., 1433. This was introduced to the States very early and is now of general occurrence. It spreads by stolons or creeping branches on the ground (not subterraneously as *pratensis*). Seed is abundantly produced. A bushel weighs about 18 pounds.

2778. Glyceria procumbens Dum., nov. forma vegeta Dr. A coarse luxuriant plant, 15 inches high, with open panicles, 4-5 inches long, was sent me [No. 2336] by Mr G. C. Brown from Backwater, Weymouth, Dorset, 1925.

2787. Festuca ovina L. W. O. Howarth, M.Sc., F.L.S. See paper in Linn. Soc. Journ. 29, 1925. Here four of Hackel's varieties are raised to species.

1. F. capillata Lam. Fertile glumes not awned. Lamina capillary, 0.3-0.5 mm.
   - Var. hirtula (Hack.). All glumes covered with minute appressed hairs. Lower leaves with spreading minute hairs.
2. F. ovina L. Fertile glumes awned. Radical sheaths entire only at extreme base.
   - Var. hispidula Hack. Back of flowering glumes minutely hispid, margins ciliate.
   - Var. firmula Hack. Fertile glumes 4-5 mm. with scabrous or hispidulous back. Leaves somewhat firm.
3. F. supina Schur. Leaf sheaths entire in lower ⅓ part. Panicles 2-4 cm. long.
4. F. longifolia Thuill. (duriuscula auct., not of L.). Lamina subjuncaceous or juncaceous, smooth, 0.7-0.1 mm. diameter.
   - Var. trachyphylla (Hack.). Lamina rough, especially about the tip. Doubtfully native.
5. F. glauca Lam. Culm 20-40 cm., angular (rarely rounded) above and usually smooth. Leaves smooth, more or less pruinose. Glumes more or less pruinose. Spikelet 5-8 mm. Rachis more or less straight. Cultivated.
   - Var. caesia (Sm.). Spikelets 6-7 mm. Rachis wavy. Somerset: Bury St Edmunds, Suffolk; Banks of Avon, Gloster; Leicester.

1, 2 and 3 are narrow leaved forms. In 1 the transverse section of the lamina is rounded. The subepidermal sclerenchyma is continuous and there are 5 vascular bundles. In 2 the lamina is more keeled, and there is discontinuous sclerenchyma and 5 vascular bundles. 3 is the same as 1 but with 7 vascular bundles. The leaf sheaths in 1 and 2 are split at base, in 3 entire in the lower ⅓ or ½ part.

The ligule auricle in 1 is prominent and prolonged slightly upwards; in 2 it is scarcely prominent, and in 3 it is finely or coarsely ciliate.

The panicle in 1 is narrow, the spikelets compact and small, the glumes at most sharp pointed: in 2 it is more open, the spikelets are larger, and the glumes distinctly awned, 1 mm. or more long.

2802. Bromus inermis Leyss. Hungarian Brome. See U.S.A. Dep. Agr. Bull., 1433. A native of central Europe, extending to China. Adventive in Britain coming in probably from American sources, where it was introduced in 1884. It is now largely cultivated in the Dakotas, Montana and Western Canada, where seed is produced. It yields from 260-600 pounds per acre. A bushel weighs from 10-20 pounds and each pound contains about 137,000 seeds. I noticed it three years ago on the railway cutting near Aanalness in Norway, and this year, in some plenty, on the army training ground at Upsala in Sweden, and by the railway near Reading, Berkshire.

2803 (2). B. UNIOLOIDES H.B.K. as B. SCHRADERI Kunth. Rescue Grass. A native of South America particularly abundant in the Argentine and Uruguay. It was first described from Carolina specimens in 1806. It is grown in South Africa and largely in Australia. The seeds are as large as oats, a bushel weighing 14-16 pounds.

2806. B. SECALINUS L. U.S.A. Dep. Agr. Bull., 1433. Cheat or Chess. Sometimes sown as an annual hay grass in the southern portions of the States under the name Arctic Grass. The name is derived from the supposition that wheat degenerated into this "Cheat" grass. Of course it is a distinct species.

2862. TAXUS BACCATA L. A case has occurred in Stirlingshire of sheep-poisoning through eating the twigs of the Yew. Sheep had been grazing in the park for a good number of years, but this was the first time any had been known to suffer. See *Gard. Chron.* ii., 33, 1925.

2880. ASPLENIUM MARINUM L.,* var. PLUMOSUM (Wollaston), teste Dr STANSFIELD. Near Budleigh Salterton, Devon, 1925, Major ORME. This was originally found in Guernsey by Mr C. Jackson, and in North Devonshire by Miss Price and Mr Thompson. It has not been seen for the last fifty years.

2892. POLYSTICHUM BRAUNII Spenn. under the name *Aspidium Braunii.* C. Schneider has a paper on this fern in *The Garden* for April 4, 184, 1925. Its history as a British plant is given in *Rep. B.E.C.*, 398, 1913, where it states that the figure of *angulare* in Step's "Wayside and Woodland Ferns" was identified by my friend, Dr H. Woynar, as *Braunii.* The plant grew in the rockery at Kew. Its claim to being a British plant rests upon a specimen gathered by the Rev. W. H. Painter, near Bristol, on the Somerset side of the Avon.

NOTES ON PUBLICATIONS, NEW BOOKS, ETC., 1925.

(Owing to exigencies of space and the erratic receipt of foreign works this is necessarily incomplete.)

ALSTON, A. H. G. Revision of the Genus *Cassipourea* Aublet. Into this he merges *Weihea* Sprengel. 62 species are described, *C. euryoides, C. Honeyi, C. celastroides, C. obovata, C. glomerata, C. latifolia, C. lasiocalyx, C. nodosa, and C. paradoxa* being new species. There are in addition many new combinations owing to the reduction of *Weihea, Dactyopetalum* and *Anstrutheriana*. Kew Bulletin 241-276, 1925. We heartily congratulate our member, the Rev. T. Alston, on his son's very promising entrance into systematic work.

ANNALS OF BOTANY. Vol. xxxix., 1925; 15/-. Thoday, T. The Geographical Distribution and Ecology of *Passerina*, 175. Good. R. D'O. Past and Present Distribution of the *Magnoliaceae*, 409. Adamson, R. S. Leaf Structure of *Juncus*, 599. *J. bufonius, effusus, maritimus, subnodulosus* and *squarrosus* are included. Haber, Julia Mosel. Anatomy and Morphology of the Flower of *Euphorbia*. Prankerd, T. L. Ontogeny of Graviperception in *Osmunda regalis*. Guppy, H. B. A Side-issue of the Age and Area Hypothesis. Snow, R. The Correlative Inhibition of the Growth of Axillary Buds. Haas P., and Hill, T. G. *Mercurialis*. Holm, Theo. On the Development of Buds on Roots and Leaves.

ARLSCHWAGER, E. and SMILEY, E. M. Dictionary of Botanical Equivalents. pp. 124, 1925; 16/6. Williams and Wilkins Company, Baltimore; Baillière, Tindall & Cox, 8 Henrietta Street, London. This volume supplies a need which is often experienced when one meets with a technical word in foreign botanical literature. It gives German-English, Dutch-English, Italian-English, and French-English, the latter by Mr Smiley. That it supplies a definite want is evidenced by the appearance of this second well printed edition which gives over 7500 names. The choice of type is good and the definitions terse and precise. An interesting page or two gives an opportunity of according to the various compositors and proof readers the press workers, cutter, folder, keyboard and carters, with their names, due praise for producing this small compact volume which merits the motto "Sans tache" with which these two pages—reminiscent of Fuchs Herbal—is headed.

BAILEY, L. H. THE PRINCIPLES OF VEGETABLE GARDENING. Eighteenth edition, revised and reset. pp. 490. Macmillan & Co., New York, 1921; 20/-. Allusion has again and again been made to the extraordinary good work by this most indefatigable writer who indeed in his encyclopedic knowledge and unwearied work has had only one serious rival in our own Loudon, but Loudon belongs to an earlier period. In this classic work—the demand for which speaks volumes as to its character—it is of course gardening in the United States which is treated on, but on almost every page there is some information given which cannot but be of use to the British gardener. As the author says, the first obligation of the horticulturist is to know his plants and be able to grow them, and on both these points the volume will materially aid. It is one of the Rural Science Series to which Mr Bailey has contributed works on the Principles of Fruit-growing and of Agriculture and, as he says, the great Rose Family so abundant in the Fruit-growing work, in this on Vegetables is practically unrepresented. The Rutaceae, Myrtaceae, Vitaceae, Palmaceae and Cupuliferae are unrepresented—whereas Cruciferae, Chenopodiaceae, Labiatae, Compositae and Umbelliferae are absent from the first category—showing there is a real divergence between pomiculture and olericulture. The vegetables are divided into those in which the leafy and growing parts are eaten. They are 114 in number, and we notice many are included which are not used in Britain. We see that *Montia fontana* is included. There are 59 Root Vegetables and 74 Fruit Vegetables. In 1889 Sturtevant (*Agr. Sc.* iii., 174) classified 1070 species of cultivated food plants, and added that his notes included 4333 species of edible plants in 1383 genera, and 176 families. "It is good to know the plants on which these products grow." The book teems with sound practical information. The author knows what to say and how to say it. The numerous inset figures add much to the usefulness of the work, nor are the remedies against the attacks of insects or fungicidal diseases omitted. Pumpkins and Tomatoes naturally have considerable space given to them and how to pack and grade is well described.

Bailey, L. H. The Cultivated Brassicas. Gentes Herbarium, i., 51-108, f. 18-49, 1922.

Balfour, F. R. S. Botany in the History of Peebleshire; chap. i. Reprint, pp. 89. Includes phanerogams, mosses and hepatics. This work brings up the list of Peebles species to something more like completeness, although there are many gaps to be filled up which persevering search will assuredly find. The highest point on Broad Law is 2723 feet, but the county is poor in alpine species and the soils are not productive, and much land is under sheep. We note that several plants duly recorded in our Reports have been overlooked. *Euphrasia Lumbii* Druce is as yet unknown elsewhere. We first named it *E. variabilis*, a pre-occupied name. The chief additions to the county flora are given under New County Records. I query the occurrence in the county of *Viola lactea* Sm. It had better be omitted as should that of *Lychnis Viscaria* L. from Glen which I never saw there, nor did I see *Stellaria nemorum* L. which is a likely plant to occur. *Spiraea Filipendula* L. is surely only a planted species at Glen. *Saxifraga oppositifolia* L., moist soils near Glen, and *Hottonia palustris* L. need verification. *Carex paradoxa* Willd. is almost certainly an error. No localities are given for *Potentilla Sibbaldii* Hall., *Hymenophyllum tunbridgense* Sm., *Chryosplenium alternifolium* L., *Asperula taurina* L., *Verbascum Thapsus* L., *Rumex sanguineus* L., *Carex laevigata* Sm., *Melica uniflora* Retz., *Festuca rigida* Roth, *Equisetum sylvaticum* L., etc. These are desirable. The *Valeriana officinalis* L. from Glen, etc., is *V. sambucifolia* Mik. *Populus serotina* Hart., *Vicia angustifolia* (L.) Reichb. (Rep. B.E.C. 104, 1917), *Alchemilla minor* Huds. (*l.c.*, 106), *Rosa apricorum* Rip. (Glen), *R. pseudo-rubiginosa* Ley (Glen), *Crataegus monogyna* Jacq., var. *quercifolia* Booth (Traquair), *Anthriscus sylvestris*, var. *angustisecta* Druce (Traquair), *Cichorium Intybus* L. (Glen 1909, onwards), *Taraxacum laevigatum* DC. (Glen), *T. spectabile* Dahlst. (Glen), *Mentha gentilis* L., *Urtica dioica* L., var. *an-*

gustifolia W. & G., *Agrostis pumila* L., *Euphrasia borealis* Wettst., *E. brevipila* Burn. and *E. micrantha* Fr., are among many recorded plants which are omitted. We are grateful for this contribution to the Flora of Peeblesshire which Mr Balfour has kindly allowed us to see.

BEAN, W. J. SHRUBS FOR AMATEURS. pp. 117, tt. xv. Country Life Ltd., London, 1924; 5/-. In this small compact volume Mr Bean has again laid the owners of small and even large gardens under a debt of gratitude since his wide knowledge is placed unreservedly at their service. Trees, Conifers, Rhododendrons and Climbers are not included. He defines a shrub as " a woody plant that does not form a single clean trunk" but, as he would acknowledge, no strict line of demarcation can be drawn. Morison in his *Historia* reserved a volume for the Arbores which never saw the light but his Arbores were woody perennials so that the Thyme and the Rock-rose would be in the same group as the Pines and Oaks. But there are enough shrubs to serve under Mr Bean's definition. Of these he figures *Viburnum tomentosum; Cistus Loreti*, a beautiful hybrid: *Aesculus parviflora*, *Pieris japonica*—the name recalls the sight of it on a hill-slope above Hakone—*Buddleia variabilis*, that most attractive plant alike for *Lepidoptera* and mankind; *Rhus Cotinus*, *Berberis stenophylla*, the early flowering *Magnolia stellata;* the New Zealand *Olearia Haastii*, which is really hardy and, somewhat unexpectedly, *Camellia japonica*, which we are accustomed to connect with cool-houses, but sheltered, it bears our weather better than it does our limy soils. I saw it growing in bitter cold on the slopes of Fuji Yama in Japan, but never so beautifully as in avenues in the mild sheltered crater of the Azorean volcano at Furnas, where trees, alternately white and red-flowered, made a carpet of fallen petals under them. Practical hints are given on Cultivation, Transplanting, Arrangement, Pruning, and Propagation, and a list of the shrubs with the time of their flowering is included; also shrubs for the rock garden, dry places, and poor soils, shrubs for autumn colouring, and shrubs with handsome or curious fruits, etc. The selection of shrubs described is excellent and, by its guide, a great improvement on British gardens might easily and inexpensively be made. The cover is adorned with *Cotoneaster Simonsii*.

Bean, W. J. Trees and Shrubs hardy in the British Isles. 2 vols., pp. 704 and 744. John Murray, 1925; 63/-.

Beauvard, G. Phanerogamarum Novitates Complémentà l'études *Paronychia Sisyrinchium*, *Ostenianum* Beauv., etc. Sur la flore vasculaire des environs de Modane de Bardonnèche et de Suisse, 1922. Contribution à la geographie botanique des Alpes de Savoie-Massif des Vergys, 1923. Une plante mal connue "L'Edelweiss." Le Paysage alpestre et son interprétature botanique. Echo des Alpes, 1923. Documents systématique relatifs à la connaissance phylogénétique des genres *Pulsatilla* et *Erythronium*. A propos d'une nouvelle espèce européenne du genre *Eleocharis* = *E. benedicta* in lunosis ad oras lacus alpestris dicti "Bénit" sabaudiae circa 1500 m. alt. Notes sur les *Taraxacum* à ligules eurolées. Bibl. zur Viertiljahrsch. Zurich. N. 3, 1924. Three forms are given—*T. cucullatum* Dahlst., *T. fontanum* Hand.-Mazz., and *T. stramineum* Beauv. Quelques plantes nouvelles du Valais. Nouveautés floristiques de la Vallée de Tourtemagne (Valais). Bull. Soc. Bot. Genèv., 1923.

Bennett, S. A., and Chase, C. D. A list of plants growing in the grounds of Campbell College, Belfast. 1925.

Bews, J. W. Plant Forms and their Evolution in South Africa. pp. 199. Longmans, Green & Co., 1925; 12/6. In the Oxford Herbarium there is a large collection of plants made by Du Bois, a treasurer of the East India Company. It is enriched by a number of Cape of Good Hope plants which were collected by A. Brown about 1700 and are among the earliest known. Cape plants were grown in the greenhouse at Oxford and at Badminton before 1720, but a Francis Masson, who discovered *Centaurium scilloides* (the white-flowered plant) in the Azores, also visited South Africa and introduced many plants to our English gardens. And as the early pages of the Botanical Magazine testify, Cape plants became very popular. The Pelargoniums and Ericas to our ancestors were what the Rhododendrons are to us. The Cape, as Prof. Bews says, has 480 species of Erica. A point was raised by a reviewer, whence was the source. It was suggested that South Europe or North Africa may have been the centre of dispersal. Prof. Bews has treated the matter from an ecological standpoint and he has opened out many interesting fields for speculation. He is wise in his advice against coming to hasty conclusions. An immense amount of information about a most fascinating flora is given, for which all botanists must be very grateful.

BLACK, J. M. FLORA OF SOUTH AUSTRALIA. Part ii., pp. 155-358. Rogers, Adelaide, 1924; 5/-.

BONAPARTE, Prince ROLAND, Membre d'Institute. Notes Pteridologiques. Fasc. xiii., pp. 304, 1921. One may again call to mind that the nomenclature is practically identical with Prof. Christensen's Indicum. *Dryopteris* is used vice *Lastrea* and *Phegopteris* is merged into it. *Phyllitis* is also used. This volume deals mainly with plants in the Prince's own Herbarium and with Brazilian species collected by Glaziou and Brusser. Fasc. xiv., pp. 492, 1921. Here is given *Dryopteris Filix-mas*, var. *abbreviata* Bab., but the authority surely is (Lam.) bracketed. *Pteridium* is used for the Bracken but, as Schinz and Thellung have shown, the correct name is *Eupteris* Newman. This volume contains many Madagascar species. Fasc. xv., pp. 54, 1924. Includes Roosevelt's specimens and the African plants from Dummer. Fasc. xvi., pp. 198, tt. 8 concludes the series for 1925. The last volume was graciously sent me by H.H. Princess Georges of Greece. This volume, prepared by His Highness during his distressingly painful illness, describes many Madagascar Ferns and includes a map of that wonderful island. Many of the specimens are described by Christensen, who did much work in its preparation. It may be added that Fascicle 6 was not issued but the material for it has been distributed through the remaining fascicles—15 in all. It is a remarkable publication which is of great importance to Pteridologists. As we have said elsewhere, his daughter, the Princess Georges of Greece, has had the collection on which the fascicles are based (10,000 in number) splendidly and conveniently housed at 57 Rue Cuvier, in the Galérie Roland Bonaparte, a fitting monument to a great scientist and a most kindly man.

BONNIER, GASTON. BRITISH FLORA. Translation and adaptation to British conditions by Ethel Mellor, D.Sc., of La Nouvelle Flore du Nord de la France et de la Belgique. pp. 315, with 2,300 text figures and map. J. M. Dent & Co., London, 1925; 7/6. While we are awaiting a new British Flora, we have here a compact and handy volume which, while it labours under the disadvantage of being drawn up from French material, will be helpful to run down the larger species, owing to the terse descriptions and the numerous text figures. Many of our manuals err in using too lengthy and too technical terms. Bonnier himself was content with simple language and aptly chose salient characters. As he said "if the features of a person are described in detail he is not recognised, but if the face be seen the person is recognised always." The minute description of a plant is not sufficient for its determination. When the plant is seen the observer experiences a security which is not given by the description. The faults incidental to such a translation—which demands an editor well up in field-work and recent botanical investigations in Britain—are of using habitats which may be correct for France but do not apply to English plants. For instance, *Dianthus caesius* does not grow with us in chalky fields. We miss many plants which ought to find a place and we find the inclusion of many for which there is little excuse:—for instance *Scorzonera grandiflora* is given. Yet, surely, if the garden *Scorzonera* is included the almost certainly native *C. humilis* should have been included. Here it may be said that a useful feature is the inclusion of many cultivated species which will prove helpful to the young botanist who may find a garden flower run wild and is tempted to refer it to some rare British plant. How many mistaken records of *Cotoneaster integerrima* could have been avoided had our British Flora included descriptions of *C. microphylla* and *C. Simonsii*. Again *Prunella grandiflora* is described but not *P. laciniata*, which is found wild in many localities. The extinct *Carex Davalliana* finds a place but not the native *C. microglochin*. *Euphorbia Esula* and *dulcis* (but not *E. virgata*), *Ajuga genevensis*, *Cerastium nigrescens*, *Pyrus minima*, *Alchemilla argentea*, *Rumex arifolius*, *Orobanche reticulata*, *O. Ritro* (yet *O. ramosa* is in as an alien upon an alien), *Epilobium Lamyi* or *obscurum*, *Populus serotina*, *Spergularia atheniensis*, *Sagina scotica*, *Hydrilla*, *Tillaea aquatica*, *Orchis praetermissa*, *Gentiana septentrionalis*, *Limonium lychnidifolium* and *Carex fulva*, among others, find no place; whereas *Myosotis stricta*, neither a garden nor a native plant of Britain is included. The retention of the alien *Naias* *graminea* is needless, and why is *Digitalis grandiflora* given? And why *Cornus Mas* and not *stolonifera*? Again the nomenclature used seems to follow no rule. At present our five British Floras are hopelessly discordant. This adds a sixth instance of divergency. In Britain there is no authentic evidence of the occurrence of *Rumex aquaticus* or *Salicornia fruticosa*. Some old hoary errors are perpetuated, e.g., *Orobanche arenaria* and, of course, *Roemeria*, *Pinguicula alpina*, *Tordylium* are given as if existing in Britain. The generic names of *Filago* and *Gnaphalium* are hopelessly confused. We have no *G. arvense* either garden or wild, nor *Helichrysum arenarium*. Such inclusions are mischievous. Four genera are included under *Orchis*. *Habenaria virescens* appears as *O. montana*. We cannot trace *Habenaria intacta* in the work at all. What object can there be in employing archaic and incorrect names such as *Ranunculus philonotis*, *Scirpus Rothii*, *Cirsium anglicum*, *Erythraea* instead of *Centaurium*, and *Statice* instead of *Limonium*. Many of the *Carex* names are also incorrect. Other examples are *Ornithopus ebracteatus* (*pinnatus* is the correct trivial), *Valerianella Morisonii*, *Crepis tectorum* (neither hortal nor British), and *C. virens*. *Cuscuta major*, instead of *europea*, cites a pre-Linnean author. Miss Mellor has added about 70 species to those given for the area treated by Bonnier, and has deleted a few (but not all) which do not occur in Britain. On the whole the work is commendably free from misprints. Useful directions are given for the collection and preservation of specimens. Of course the book is not meant to be an intensive study, so we have only one Hawthorn, one Dandelion, one Capsella, five Rubi, two Burdocks, five Roses, one Eyebright, two Elms, and seven Fumarias. The best and most useful part of the work is the index which Miss Mellor has prepared. This abounds with useful information, giving as it does the etymology of the genera, some of the synonyms, and the properties of the plants. But is it *Mentha sativa* that is used in making Crême de Menthe?

Borgesen, F. Contributions to the Knowledge of the Vegetation of the Canary Islands in D. Kgl. Dansk. Vid. Selsk. Skr. natur. og mathem. Afd. 8. Raekke. vi., 3, 285-398, tt. 58, 1924.

Botanical Abstracts. Vol. xiv. William Wilkins Co., Baltimore, 1925.

BOURCART, E., D.Sc. INSECTICIDES, FUNGICIDES AND WEED-KILLERS. A Practical Manual on the Diseases of Plants and their Remedies, for the use of manufacturing Chemists, Agriculturists, Arboriculturists and Horticulturists. pp. 431. Scott, Greenwood & Son, London, 1925; 15/-. Translated from the French and adapted to British Standards and Practice. Second edition, revised and enlarged, by THOMAS K. BURTON. That this work has created a demand is evidenced by this well-printed and well-arranged second edition by Mr Burton. It is especially valuable from the various recipes given being of tried effect. The insecticide industry has been developed especially in the United States, where an active and paternal government and an excellently organised and most energetic agricultural department is tackling the great problem which cultivation of plants on a large scale is sure to create. The chief preventive methods are those by water, sulphuretted hydrogen, carbon bisulphide, sulphurous and other acids, phosphorus compounds, arsenious acid and compound alkalies, metallic salts, copper preparations—perhaps the most valuable of all—hydrocarbons, grease-banding, and poisonous alkaloids such as nicotine. To gardeners and agriculturists this work will be of real practical value, and when it is recognised that at least ten per cent. of our vegetable produce is the toll taken by plant-diseases it will be admitted that the practical utility of such a work as this must be very great. The chapter on sulphate of copper dressing for seed-wheat is alone worth the cost of the volume. There is a good index and the book is well printed and arranged.

BOWER, Prof. F. O., F.R.S. The Natural Classification of Ferns as a Study in Evolutionary Methods. Three Royal Institution Lectures. May and June, 1925. Nature ii., 136.

BOWER, F. O. PLANTS AND MAN. Macmillan & Co., Ltd., 1925. Professor Bower gives us in this volume a most instructive collection of essays on various aspects of man's relations with the vegetable kingdom—our entire dependence on it, direct or at second hand, for food; the injuries which we inflict upon it; the improvements which we have produced in vegetables and fruits; the changes which we have evolved in flowers; our various needs of different kinds of food; the necessity for us of the three "Vitamins;" the fascinating resemblance between man's and plant's methods of engineering, together with interesting discussions on parasites, on "conjoint life" and on the not very old discovery of "Mycorhiza." The story of plant life and growth takes up chapters i., ii. and iii. In iv. is pointed out the theoretically unlimited scheme of the plant body as bearing on the size of plants, and in chapter v. the effect on plant developments of the fixed position as compared with the mobile life of most members of the animal kingdom. Under the head of "Meadow and pasture," he tells us of the parasites which so much injure it and we shall regret to find, if not already acquainted with the fact, that the happy-looking Eyebright and our merry friend the Yellow Rattle are among these thieves of the vegetable world. In chapter xxiii. he enlarges on this subject as regards flowering plants. As with human parasites, so with plants, it is a case of degeneracy from a nobler life, such plants having more or less completely lost their chlorophyll, their leaves, their proper roots —in a word, their self dependance. In this way plants of very different orders have fallen from the high estate of their ancestors. Most curious of all is the *Rafflesia*, of whose strange buds and enormous blossoms we are given excellent pictures. In chapter xxvi., the Professor discourses on Fungal parasitism, and gives us the now well known story of the *Aecidium Berberidis*. When the farmers asserted that the rust in wheat was caused by the Barberry the sceptics laughed, but "old experience" proved to be right after all. The lesson is one to be remembered and now other precisely similar cases have been discovered and, like the Aecidium, have been made the subjects of legislation. But these studies of parasitism lead us up to a much more pleasant arrangement—the mutual assistance of a Fungus and a tree or smaller plant to the benefit of both. This form of symbiosis, co-partnership or conjoint life has been called Mycorhiza, and there are, we are told, two forms of it. In the first the fungus is entirely outside the tree—Oak, Hornbeam, Beech—and draws from the soil soluble salts, combined nitrogen, and even perhaps organic material from the humus. This nourishment it supplies to some of the rootlets of the tree and, it may be, receives carbohydrates in return. In the second case the fungus penetrates the living cells of its host, the symbiosis being more intimate than in the first case. This is characteristic of heather, rhododendron, and some orchids. The fungus reaches not only the root but also the stem, the leaves and even the coats of the seed. Experiment has shown that the heather is absolutely dependent on the fungus for the growth of the seedlings and for its subsequent existence, and on this " infection " by the fungus the life of various orchids has also been shown to depend. The history of the Bird's-nest Orchis illustrates this wonderful co-partnership. The subject suggests wide possibilities of research. But we now come to the more practical part of the essays—man's direct relation to the vegetable kingdom. In chapters vii. and viii. a very much needed warning is given for many governments. We are told, with plentiful statistics, of man's destruction of the forest. In the long war between forest and meadow nature has long ago established a truce and a balance; but man, regardless of the future wants of his race and forgetful even of the danger to himself from this reckless expenditure of capital, is everywhere cutting down the forest and failing to replenish it. " The whole world," says the Professor, " is living a spendthrift life." There is, too, the continual loss of instructive and interesting plants, even as in the animal world so many creatures are being exterminated through selfishness, greed and vanity. And who can say but that some of these endangered plants may have properties of infinite value to man? The strange and extreme changes which can be effected in cereals, fruits and vegetables by selection occupy chapters xiii., xiv. and xv., and the subject is illustrated by the manifold derivatives of the wild *Brassica oleracea* and *B. campestris.* In reading chapter xii. one may be permitted to doubt whether such changes as have been produced by " doubling " Peonies and Dahlias have not been the reverse of improvement, and the comparison which is beautifully shown on page 141 between a wild " Guelder Rose " and the meaningless ball of sterile flowers that passes for it in our gardens certainly allows us to think that nature's taste is superior to ours or at any rate to the gardeners' who produce it. In chapters xvii. to xx. we have a point of immense interest—the mechanical construction of trees and plants by which they are enabled to support or recover from the assaults of winds and storms. The professor points out the similarity of the various methods adopted by man and by plants to secure strength. It scarcely appears that men have anywhere copied nature but one may well believe that the engineer of the future, if also a botanist, may some day get an idea from her plans. Chapter xvi. should be interesting to the matron and caterer of our homes and indeed to all who have regard for health. There we have impressed upon us the necessity of variety in food for all—fresh fruits, green vegetables, and the like, and we are told the story of the three " Vitamins " with cautions as to their preservation during the cooking of the foods which contain them. An interesting point here is the way in which men have, by some instinct and without any science, combined different foods to supply a perfect diet, as for instance almonds and raisins. In an old book, " The Chemistry of Common Life," other cases of the same thing were given, the result of either taste or of experience. Cress grown on layers of cotton wool, an amusement of our young days, is suggested as supplying a green food when other such food is not procurable. And we are not to forget that dried and preserved fruits and vegetables are not of the same value as fresh ones. We shall [illegible] of us welcome his allusion to " sensational writing " on such subjects as he has been treating of. Most of us have come across popular books of the sort, and perhaps been misled by them! These essays have mostly been reprinted from various publications and even yet I have not enumerated all the interesting subjects on which the Professor has instructed us, as the lessons of the seashore, the botany of golf links and playing fields, the production of textiles and twine, bacteria, and even scavenging and its necessity. But it will be seen that he has been equally instructive and practical in them and one can only hope that his warnings on the subject of health and on man's thoughtless interference with nature may not be without effect. F. BENNETT.

BRITISH BRYOLOGICAL SOCIETY. Report for 1925. President, S. M. MacVicar. Includes new discoveries, also an interesting paper on " An Autumn at the English Lakes," by Rev. C. H. Binstead.

BROWN, N. E. Mesembryanthemum and some new Genera separated from it. Gard. Chron. ii., 211, 232. Shows that the Linnean genus was made up of discordant elements and is badly described. He makes *M. umbellatum* L. the type of the newly restricted genus and gives a very useful clavis to the large number of genera (48) which he makes. He says the fruit-characters have been greatly neglected by botanists, although they are of great taxonomic value.

BROWNE, Lady ISABEL M. P. Notes on the Cones of the Calamostachys type in the Renault and Roche Collections in the Museum à Histoire Naturelle at Paris. Annals of Botany, vol. 39, 313-358, 1925. Structure of the Rhizome of *Equisetum giganteum*. Bot. Gazette 80, 47, 1925.

BULLETIN OF THE TORREY BOTANICAL CLUB. Vol. 52. Editor, Tracy Elliot Hazen.

BURKILL, I. H., and HENDERSON, M. R. FLORA OF TAIPING. This is one of the Federated Malay States. 1980 species of flowering plants are recorded, of which 41 have been introduced. The authors state that there are 360 endemic species in the Malay Peninsula.

CAMBRIDGE: DELECTUM SEMINUM EX HORT. CANTABRIGIENSE ACADEMIAE, 1925. Arranged according to Engler's System. No capitals are used for species named. Aizoidaceae not Ficoidaceae or Ficoideae is used. Has not Tetragoniaceae the prior claim?

CANADIAN ARCTIC EXPEDITION, 1913-18. Report of the Botany. Vol. 4, by G. K. Merrill. Lichens. Vol. 5. Southern Party, 1913-16, by Fritz Johansen. F. A. Acland Ollaway, 1924.

CHAMBERLAIN, Prof. C. J. Methods in Plant Histology. 4th revised edition. pp. xi., 349. Chicago University Press; Cambridge University Press, London, 1924. Origin of Cycads. Science 61, 1925. "We feel certain that the facts already known prove that the Cycadales have come from the Cycadofilicales (Pteridosperms) and that the differentiation of the two groups may have occurred long before the end of the Carboniferous." Comparitive Morphology of Cytoplasm and Chromatin. Bot. Gaz. 80, 203, 1925.

CHARBONNEL, J. B. Menthae Exsiccatae de la Monde du Plantes, 1924-25. Includes a large number of varieties of *Mentha longifolia*.

CHEESEMAN, T. F. MANUAL OF THE NEW ZEALAND FLORA. 2nd edition. Edited by W. R. B. Oliver. pp. xliv., 1163. W. A. J. Skinner, Wellington, New Zealand, 1925.

Craib, W. G. Flores Sinensis Enumeratio. pp. 198. Luizac & Co., London : 12/6.

Curtis's Botanical Magazine. Edited by O. Stapf, Ph.D. tt. 9035-9081. The name *Crocus Kotschyanus* is properly restored for the plant figured by Maw in Genus Crocus, t. iv., as *zonatus*, Koch having described his plant 12 years before Klatt described *zonatus*. We are glad to see that Miller's Abridg. of Gard. Dict., ed. 1754, is cited for *Pulsatilla*, and the editor adopts the separation of it as a distinct genus, despite the union of it with *Anemone* by Bentham and Hooker. A beautiful new species *Chionodoxa Siehei* is described by Stapf. It was discovered by George Maw on Nymph Dagh in Asia Minor.

Dahlstedt, H. Taraxaca fron Västra Norge. Bergens Mus. Aarbok. N. 6, 1923-4.

Danser, Dr B. H. Over de Beteekenis van de Plantengeographie voor de Phylogenie de Systematick. pp. 31, 1925. *Rumex ersul.* nov. hybr. (*R. fennicus* × *nepalensis*) overg.-ned. Kruid. Arch. 213. 1925.

Davidson, J., D.Sc. A List of British Aphides. Including notes on their Synonymy, their recorded Distribution, and Food Plants in Britain and a Food Plant Index. pp. 176. Longmans, Green & Co., London, 1925 ; 12/6. This is one of the valuable Rothamsted Monographs on Agricultural Science which have been edited by Sir E. John Russell. The last work on the subject, Buckton's Monograph of British Aphides, was issued 1871-1883. Since then many species have been added, and the nomenclature (Botany has not the monopoly of phantasmagorical changes) has "undergone revolutionary changes." Here the species are arranged in alphabetical order. The starting point in nomenclature dates from the *Systema Naturae* of Linnaeus 1758—so that some of the names used by Buckton, who went back to 1737, are not retained. It is to be regretted that the plant names are not more in accord with the *Actes* or general use. There is no excuse for *Tussilago petasites* or *Triticum repens* being chosen, as Linnaeus spelt the former with a capital; In this work no capitals are used in the case of old generic names or those based on a personal name, *e.g.*, *Achillea millefolium*. or *Asplenium felix-foemina*, so an inexcusable name is used twice for one plant since no author of repute now puts the Lady Fern as an *Asplenium*. Other extraordinary plant names are *Arundo Epigos*, *Fontederia cordata*, *Chenopodium quinosa*, both *Alisma aquatica* and *A. Plantago*, *Pimilea*, *Acrolinium*, both *Rhinanthus Crista-galli* and *R. minor*, *Larix decidua* and *L. communis*. But there are many others which suggest calling in a taxonomist to revise the next proof sheets. "*Carex dioca*" (as it is spelled in several places) "roots in nests of ants," a very unusual habitat. As far as the Aphides are concerned the work is valuable, rendered more so, as it is, by a separate list of generic names, with synonyms. There is a good bibliography. That it is well got up and printed the names of the publishers are a sufficient guarantee.

Devon. Sixteenth Report on the Flora and Botany of Devon. Recorder, Miss C. E. Larter. Trans. Devon. Ass. 56, 111-121, 1924. Includes *Draba muralis* L. from Bishop's Tawton, " the only satisfactory record " for Devon ; *Rubus Leyanus* Rogers from Atherington, Hiern ; pink-flowered *Oxalis Acetosella* from Loxhore ; *Ophrys Trollii* from near Yeaton, and *Lilium Martagon* L. from Luppitts. When will a general Flora be published? There are many MSS. records and Miss Larter is to be congratulated in bringing these various notes together.

Dixon, H. N., and Nicholson, W. E. New British Bryophytes. Journ. Bot. 125, 1925. *Webera calcarea* Warnst. (Lewes, Belfast); *Grimmia andreaeoides* Limpr. (Snowdon); *Fossombronia Loitlesbergeri* Schiffn. and *Gonglanthus ericetorum* Nees (Lizard); *Cephalozia compacta* Warnst. (Goathland, Yorks).

Domin, Prof. Karl. Contributions to the Morphology and Teratology of Plants. Bul. Intern. l'Acad. Sc. Bohème, 1923. Instances of coleophylla in *Ranunculus bulbosus* are shown, and the evolution of leaves in *Sambucus nigra* and *Ononis spinosa*.

Drummond, Prof. J. M. E. Royal Phil. Soc. of Glasgow, February, 1925. The average Linnean species which resolved itself under cultivation into a number of smaller units commonly called varieties "could be further analysed into still smaller units, the 'pure lines'," and these may be separated from one another in the case of self-fertile plants by the simple expedient of breeding in each generation from a single self-fertilised plant. Such pure lines have been proved to maintain their distinctive characters for over fifty generations, and there is no reason to doubt that if there be any unit of a higher order of magnitude than the individual. which represents the unit of evolution, that unit is the pure line.

Dymes, T. A., F.L.S. On Collecting and Curating Fruits and Seeds for the Study of Local Dispersal. Essex Nat. xxi., 43-59. This is an extremely practical paper containing valuable suggestions and we would much like to reprint it in a condensed form.

Engler and Prantl. Pflanzenfamilien. Ed. 2, enlarged. A. Engler. Mosses, 2nd part. V. F. Brotherus, pp. iv., 542, tt. 376 and Indices, vols. 1 and 2. W. Engelmann, Leipzig, 1925; 34 marks.

Engler, A. Das Pflanzenreich. Cruciferae-Brassiceae. O. E. Schulz. pp. 100, tt. 26, 1923. Euphorbiaceae. F. Pax & K. Hoffmann. Engelmann, Leipzig, 1924.

Edinburgh. Transactions and Proceedings of the Botanical Society, vol. xxix., 1924. *Carex microglochin*, Scottish Taraxaca G. C. Druce. *Primula Pauliana*. Prof. W. W. Smith. Additional Notes on the Flora of Culbin Sands, E. J. A. Stewart and Donald Patton. Notes on *Potamogeton* by Arth. Bennett. These include *P. alpinus* × *polygonifolius* found by Dr Druce at St Ouen's, Jersey; *P. alpinus* × *heterophyllus* = *P. nericens* (Hagstr.) found by Dr Druce in the River Don near Alford, N. Aberdeen; *P. heterophyllus* × *polygonifolius* = *P. Seemenii* Asch. and Graebn. found by Dr Druce in the River Laune, Co. Kerry (see *Rep. B.E.C.* 631, 1922); *P. zosterifolius*, var. nov. *americanus* A. Benn. from the States; *P. coloratus* × *pusillus* = *P. perpygmaeus* Hagstr. (see *Rep. B.E.C.* 630, 1922). My authority for the Burwell plant, being the same as the Irish plant, was Dr Hagstrom. As regards the Lligwy station it must be remembered that a century ago a lake existed above the stream, but it is now drained. In that piece of water hybridisation might have taken place and the parent or parents may have disappeared. *P. foliosus* Raf., found by our member, Mr W. D'Urban, near Exeter, Mr Bennett names var. *diffusus*, a grade questioned by an American authority. *P. alatofructus*, a new species, found in Mandschuria, named by Bennett *P. mandschuriensis*, is raised to specific rank. *P. Hagstromii* Benn. is from British Columbia and *P. venosus* from Natal. Notes on Caithness plants, Arth. Bennett. Moss Records for Selkirk, J. R. Simpson. Additions to the Flora of Orkney, Col. H. H. Johnston. These include *Taraxacum laetifrons* Dahlst., *T. subsimile* Dahlst., and *Zannichellia repens*. This replaces *Z. polycarpa* from the Loch of Kirkbister. *Agropyron junceum* (recorded as *Triticum*) × *repens* has been described as × *A. Hackelii* Druce. It is not the *acutum* of DC. with which it was at first identified. Obituaries are given of Eugene Warming and Richard Globe Guyer. Flora of Salisbury Crags, G. B. Wallace. Mentions " seeds sown on Calton Hill and the Foot of Salisbury Crags in the year 1822." All these are said to be extinct. *Silene italica* was collected in 1834. Mr Wallace enumerates 178 species. He noticed 68 species in 1924. Notes on British Carices, Arth. Bennett. Regarding *Carex Davalliana* Sm. Mr Bennett says that doubts were expressed for many years whether this really had occurred in Britain. That is so since the Mearnshire specimens were only a form of *dioica* (see Extinct and Dubious Plants of Britain), but Mr Forster's plant from Lansdowne, Bath, which I have in my Herbarium, is the true species. It is now extinct as the site was built over. *C. aquatilis*, var. *rigida*, Mr Bennett considers to be a " remarkable variety " quite unlike any form in the splendid series of the Scandinavian specimens in Almquist's herbarium. It came from the banks of the Nith, Sanquhar, Dumfries, and Kenmore Holms, New Galloway. One may add that " var. *montana* " of *C. pulicaris* was named a forma not a variety. Specific rank is awarded to *C. discolor* Nylander. Bennett found it in Herbaria from Caenlochan, Forfar (B. White) but Nyman, Richter and Almquist all refer it to a form of *salina*. *C. flacca* Schreb., 1771 = *C. diversicolor* Crantz, 1776. See my note in *Rep. B.E.C.* where the various varieties are put under the species of Crantz. *C. flava* × *saxatilis* = × *C. Marshalli* Arth. Bennet. I am not sure whether the first parent is typical *flava*. Additions to the Flora of Orkney, Col. H. H. Johnston. *Cer-*

astium tetrandum Curt., var. *eglandulosum* C. E. Salm. Col. Johnston found that the plants growing in the early season were eglandular, and that those growing in the later part of the year were glandular, but one cannot be certain if the original eglandular plants developed glands, although this is not unlikely. In such fluid species as Cerastia soils and exposure have great influence, and a varietal grade for such a divergence seems unnecessary. One regrets to see the name *Equisetum umbrosum* replace the valid name of *E. pratense* Ehrh., for which no reason can be assigned. Notes on Strand Plants, North M. Cummings. *Atriplex Babingtonii.* The name should be *A. glabriuscula* Edmondston, given in his Flora of Shetland before Woods named it *A. Babingtonii.* Notes on Canarian and Madeiran *Sempervivа.* R. L. Praeger.

Edinburgh Royal Botanic Garden, Notes from. xv. Revision of the Genus Nomocharis and the Genus Coluria, W. Edgar Evans.

Farrow, E. Bickworth, M.A., D.Sc. Plant Life on East Anglican Heaths: being Observational and Experimental Studies of the Vegetation of Breckland. pp. 108. Cambridge University Press, 1925; 7/6. Notices of this have appeared in our Reports as it was being published in the Journal of Ecology. It is interesting to learn that lantern slides of the photographs can be obtained at 1/6 each from Flatters & Garnett, 309 Oxford Road, Manchester. The area treated is a fascinating one to the field botanist. It has an area of about 400 square miles, and its highest point is only about 150 feet in altitude. The underlying rock is chalk, which is for the most part covered by thin layers of boulder-clay or fine sandy deposits. The low rainfall (22.5 inches) shows that it is one of the driest districts in Britain. One of its features is the sudden transition from dry heath-land, where *Silene Otites*, *Artemisia campestris*, *Scleranthus perennis*, *Herniaria glabra*. *Silene conica*. *Carex arenaria*, etc., grow to the marsh occupied by *Drosera*, *Erica Tetralix*, *Hydrocotyle*, *Anagallis tenella*, etc. One of the curious factors is that of the influence in distribution caused by the immense quantity of rabbits with which the county abounds. Mr Farrow believes that they bring about the degeneration of Calluna-heath to grass-heath, and he includes some good photographs to illustrate it. Pro tected spaces show *Sedum acre*, *Campanula rotundifolia*, *Galium verum*, etc., flowering freely, while open areas are bitten down. He finds that *Solanum nigrum*, *Conium maculatum*, *Urtica dioica* and *U. urens* are the only herbaceous plants which are not more or less severely attacked by them. In our Berkshire area of Wytham, where rabbits were a pestilential curse, one noticed that *Conium* and *Atropa* were attacked but *Euonymus* was shunned. Their tree ravages receive due attention. *Eupteris* is also an inimical feature in Breckland as elsewhere. The author adheres to the better known name of *Pteris*. The effects of sand-blast are also vividly shown. Dr Farrow is to be congratulated on completing so valuable a contribution to the ecology of Breckland which the Cambridge University Press has issued in such an attractive style.

Fernald, Prof. M. L. Persistence of Plants in Unglaciated Areas of Boreal America. Memoirs of the Gray Herbarium of Harvard University. Reprinted from Mem. Amer. Acad. of Arts and Sciences, xv., 241-336, 1925. The author says that the vast majority of plants of continental regions are wide-spread and somewhat general in occurrence in proper habitats over extensive areas. For instance, such a tree as the Pitch Pine of Eastern North America occurs from Southern Maine to Lake Ontario and south to the hills of Northern Georgia and Tennessee; or the common pitcher plant occurs in peat-bogs from Florida to the southern slope of the Labrador peninsula and west through the Northern States and Canada to Iowa and Mackenzie. One of the first plants I noticed on the Western Coast was *Cornus canadensis* at Vancouver and it was one of the last I noticed near Quebec. Prof. Fernald says the plants which characterise the Arctic Regions show an " amazingly disrupted occurrence —on various islands of the Arctic Archipelago, or on the Arctic or sub-Arctic coasts of America, and in the Arctic areas of Eurasia, with localised colonies isolated far to the South; or on bleak spots in the alpine areas of the Pyrenees, the Alps, the Carpathians, the Himalayas, Altai, Rocky Mountains of Alberta or Colorado, Mt. Washington in New Hampshire, or Mt. Kahaddin in Maine." Dr Fernald's idea is that these regions occupied by a Western Flora remained almost completely unglaciated during the Pleistocene. He alludes to the flora of Greenland, itself still in the glacial period.

Yet in its 800,000 square miles of area 416 species of plants are known. The memoir deserves very careful study.

Gamble, J. S., C.I.E., F.R.S. Flora of the Presidency of Madras. Part vii. Nyctaginaceae to Euphorbiaceae. pp. 1161-1346. Adlard & Son & West Newman, London, 1925; 8/-. This part is carried on with the same meticulous care which marks the preceding six parts. Alas, before it was issued, its talented author passed away.

Gardner, J. Stanley. The Natural History of Wicken Fen. Part 2, pp. 65-171. Bowes & Bowes, Cambridge, 1925; 6/-.

Gates, Prof. Ruggles. Mutation. Lecture at King's College. See Nature 409, 1925. *Chelidonium laciniatum* is used as an example.

Godfery, Col. M. J. Three Hybrids of *Nigritella nigra* Reichb. in Switzerland. Journ. Bot. 313, 1925. Fertilisation of *Ophrys speculum*, *O. lutea* and *O. fusca*, *l.c.* 33, 1925. The Royal Horticultural Society awarded Mrs Godfery on November 3rd the Society's Gold Medal for her exhibit of 184 water colour drawings of European Orchids prepared from living plants collected during the last seventeen years by Col. Godfery.

Goulding, R. W. Memoir of Richard Kaye, Bt., D.C.L., Dean of Lincoln. A delightful study of a notable person whose acquaintance with botany was practically unknown to most of us. However, Mr Goulding supplied a List of Plants at Welbeck and Kirkby from the Brit. Mus. MSS. 18565, pp. 68-69, which was compiled by Dr Kaye in 1777 for Welbeck and in 1774 for Kirkby. These will be in many cases the first evidence of them as plants of Notts. They include *Cymbalaria rotundifolia* and *Blackstonia perfoliata*. The adventive *Salvia Horminum* was seen by Kaye in 1782 and by Mr Goulding in 1924.

Gardeners' Chronicle. 5 Tavistock Street, Covent Garden, W.C.2; 30/- per annum. This old-established gardening paper still maintains its high reputation and much of general interest will be found in its pages. Among articles of value are:—The Garden in

Antiquity : Early Persian Influence, Rev. Hilderic Friend, pp. 130-194. The Assyrean Achievements, pp. 184-252. Mummy Plants of Ancient Egypt, p. 436. Early Egyptian Garden Craft, ii., p. 70. Ancient China, p. 106. Chinese Classics, p. 150. Hindu Gardens, p. 251. An article with a portrait of Dr W. B. Brierley, the well-known Rothamsted scientist, p. 104. *Heracleum villosum*, with illustration, p. 113. *Geranium Endressi*, with a supposed hybrid with *striatum*, p. 126. The Tomato, its History, with a figure from Dodonaeus, circa 1587. Plants of chalky soils, p. 139. Stock and Scion, p. 165, mentions a graft hybrid of *Aucuba Japonica*, var. *variegata*, made by Mr F. Sansome. He took a scion from a green-leaved form and grafted on it the variegatcd-leaved plant when it became variegated. This is the first recorded instance of such a change. *Tilia europea* has been grafted on *T. petiolaris*. The branches of the stock were defoliated in the autumn while those of the graft still bore their green leaves. Familiar Plants of Palestine, p. 208. Hanging Gardens of Babylon, p. 284. Old Egyptian Vine Cultures, p. 375. Sanskrit Gleanings, p. 311. Sacred Plants of the Hindus, p. 350. Gardens of Damascus and Syria, p. 430. British Plants at the Royal Horticultural Hall, March 10th—plants discovered or named by the exhibitor, Dr G. C. Druce, p. 50. Vegetable Marrows, p. 224, with figures from Dodonaeus' Herbal, 1554. Timber of Ancient London, p. 302, Mr A. D. Webster. Water pipes which had been in use for 300 years were of elm—the pipes being laid by Sir Hugh Middleton, 1609-1613. The trunks were about 18 inches diameter and the wood was quite sound. In connection with the approaches to London Bridge large quantities of native trunks were found. The fosse embankment on the south side of Thames Street was formed of large solid trunks of Oak and Chestnut, roughly hewn, and about two feet square. Lower down the river at Dagenham yew was used, the trees being from 14-16 inches diameter and perfectly sound except the sap-wood. Willow trees also were found, some being two feet and more in diameter. Garden Notes from South-West Scotland, Sir Herbert Maxwell, p. 306. Kingdon Ward : Eighth Expedition in Asia, pp. 236, 318, 394, 434, ii., 12, 50, 90, 130, 191, 231, 292, 408, 448, 482. Dr G. Claridge Druce, with portrait, p. 350. Savoy Cabbage, with a picture from Dodonaeus' Herbal of 1554, p. 341. Rt. Hon. Sir Alfred Mond, Bt., p. 346. Prof.

F. W. Oliver, F.R.S., with portrait, p. 388. A new genus of *Cactaceae* from Mexico—*Roseocactus* Berger, fig. 188, p. 415. Autumn in the Punjab, G. Burrows, p. 92. On Variegation, ii., p. 21. Kale, ii., 155, with illustrations from Dodonaeus' Herbal. Half-an-hour in the Oxford Botanic Garden. The Dandelion, S. B. Dicks, p. 253, but the writer does not refer to recent works on the genus, *i.e.*, Handel-Mazzeti or Dahlstedt.

GRANT, A. L. A Monograph on the genus *Mimulus*. Ann. Miss. Bot. Gard. ii., 99-388. April-September 1924. January 1925.

HAINES, H. H. THE BOTANY OF BIHAR AND ORISSA. An Account of all the known Indigenous Plants of the Province and of the most Important or most commonly Cultivated Exotic ones. In 6 parts. pp. 199, ii., 1-1058. W. Thacker & Co., London,, 1921-25; 62 rupees.

HALL, Rev. CHARLES A. The Open Book to Nature. An Introduction to Nature Study. 3rd edition, pp. 256. A. & C. Black, Ltd., London, 1925; 6/-.

HAMPTON, F. A., M.A. The Scent of Flowers and Leaves: its Purpose and Relation to Man. pp. 129. Dulau & Co., London, 1925; 6/-. This work is commendable for the original manner in which the subject is treated. He alludes to the sense of smell—a hedonistic sense, a means of pleasure, a slightly warning value—the last, an easily over-rated thing, since, while it makes one intolerant of defective sanitation, does not reject a well-hung pheasant. As he says, we do more smelling by the palate than through the nose, for the latter is just as sensitive to a trace of garlic in a bowl of salad as it is in detecting a quarter of a millionth of a grain of chlorphenol in 50 cc. of air. A good wine taster can identify 30 or more varieties of wine with his eyes shut. But the sense can be educated, so that flower scents, which at first were thought to be the same, can be segregated. He says that keenness of scent is especially developed in dark-haired people. Albinos are usually unable to smell. He points out that the odour of some substances changes with dilution—indol concentrated is sewage-like: diluted it is like *Narcissus*. We know that the flowers of *Tilia* give a perfume which is distinctly more pleasant and more powerful at some distances from the tree. Flower scent is primarily due to the presence of essential oils, attars, of which the type is the well-known rose-product. The various oils and their chemical composition are given. The lemon scent is due to citral, and to geraniol in *Cymbopogon citratus*, the Lemon grass. *Orchis pyramidalis* has a carnation type of scent during the day while *O. mascula* has a cat-like odour which changes as the flowers fade. The manner in which the essential oil is distributed in the plant is given, and the Function of Scent is discussed. He gives the interesting and suggestive statement that, as compared with carbolic acid the oil of Thyme has twelve times the antiseptic value, Verbena 9, Clove 8, Cinnamon 7, Rose 7, Rue 6, Rosemary 5 (decimal points are omitted) so that one sees why Cinnamon and Camphor were carried in the doctor's gold-headed cane, and why sprays of Rosemary and Rue were used on the judicial bench. Chapters are devoted to Insects and the Scent of Flowers, and Scent in Relation to Botanical Characters (*Adoxa Moschatellina* is the correct name on p. 5, and *conopsea* on p. 52). A valuable contribution is the Classification of Flower Scents, and in this there is a wealth of information. On p. 79 goose-grass should read goose-foot. This owes its horrid odour to trimethylamine. Garden Scents is a very readable production. There is also a good account of the Extraction of Scent and Perfume-making. The History of Scent is not neglected. Mr Hampton says that in A.D. 810 the Persian Province of Faristan paid a tribute of 30,000 bottles of Rose Water to Baghdad. There is a useful Bibliography and the author is to be warmly commended for his instructive work.

HOFFMAN, Dr JULIUS. ALPINE FLORA FOR TOURISTS AND AMATEUR BOTANISTS, with text descriptive of the most widely distributed and attractive Alpine Plants. Translated by H. S. Barton (Mrs A. Gepp), with 43 plates containing 283 coloured figures.

HORWOOD, A. R. Leaves from a Naturalist's Diary: with Notes on What to Look for Month by Month. pp. 192, tt. iv. J. G. Harrap & Co., 1924; 3/6.

HURST, C. C., Ph.D. Chromosomes and Characters in *Rosa* and their Significance in the Origin of Species. Reprint from the Cambridge University Press, 1925. This preliminary work of Dr Hurst gives due acknowledgment of the labours of his predecessors in Rose Cytology, Blackburn and Harrison, which have been noticed in these pages. It promises to be of high importance as his study, which began at Burbage in 1910, has, with the exception of war-time, been continuous, and some years must elapse before his classification and monograph of this large and difficult genus can be completed. In this introductory paper there is much of high importance and value. It is now definitely established that Strasburger in 1904 was wrong in stating that the fundamental number of chromosomes in *Rosa* was 8. Täckholm, Blackburn and Harrison almost simultaneously proved that they were 7 in number. Dr Hurst's recent work fully confirms the latter figure as correct and " we still are 7." Further, the results show that all the somatic and genetic chromosomes obtained are either seven or a multiple of seven. Gametic chromosomes, male and female, are either equal with 7-14-21 or 28 each or unequal and matroclinous with a maternal bias of 1.5-2-3-4 or 5.1. All are seven or a multiple of seven, so that *tomentosa* has 5 seplets and *mollis* has only 4 seplets. The seplet characters in *Rosa* provide a natural and precise method of classification of this species in the genus. This is based on cytological, genetical, and taxonomic characters combined. We can therefore have nine sections and these may be subdivided into 15 subsections and these again into the simple 211 simple and compound seplet species. . . . This gives a definite and uniform classification of the species in which each species in a section or sub-section differs from another simply in a seplet of chromosomes and characters. The first volume of the monograph is expected to be produced this year. It will deal with " The Five Diploid Species of *Rosa*." The significance of the seplets was evidenced when comparing the taxonomic characters of living species at Kew. One was struck by the fact that the tetraploid species showed the combined characters of two distinct diploid species while the hexaploid species showed the combined characters of three distinct diploid species, while the octoploid species showed the characters of four distinct diploid species. Those interested in the subject must refer to the original paper, but the facts ascertained are of very high importance. Just now British botanists may choose between the multitude of the Déséglisian or the paucity of Benthamian species, five being given in the last Handbook, where *mollis* and *tomentosa* are united under *villosa*. Twenty years ago Crépin asserted, and quite rightly, that they were physiologically distinct, but Bentham not only united them but added *pomifera* as a variety, with the naïve remark that it seems in some localities to pass into a form of *canina*! But Dr Hurst shows that the various forms of *R. tomentosa* can be distinguished from those of *mollis* by an additional septet of chromosomes.

IRISH NATURALISTS' JOURNAL. A Magazine of Natural History, Antiquities and Ethnology. Editor-in-Chief, J. A. S. Stendall. Botany, S. A. Bennett, Rev. W. R. Began. Bi-monthly, 6/- per year. We hope the publication may be prosperous. A bringing up to date of Irish Topographical Botany in a supplement is much to be desired. The September number contains several botanical notes and a list of plants new to the Rathlin Island List.

IMPERIAL BOTANICAL CONFERENCE. London, July 1924. Reports of the Proceedings. Cambridge University Press, 1925. This has been already attended to in these pages, but it may be added that the following recommendations were carried :—

1. Article 36 should be replaced by a strong recommendation to supply Latin diagnoses.
2. All combinations which are homonyms (*i.e.*, later homonyms) should be rejected.
3. All generic names which are homonyms (later homonyms) should be rejected except such as may be specially conserved.
4. The principle of the Type method of applying names should be formally accepted.
5. Art. 55 (2) rejecting duplicated binomials, *e.g.*, *Linaria Linaria*, should be revoked.
6. The principle of " nomina abortiva " should be expunged from the Rules.
7. The List of Nomina Generica Conservanda should be revised.
8. It should be made clear how far each of the Nomina Conservanda is conserved.
9. That for the future the name of a group shall not be regarded as effectively published when the description is issued only with exsiccata.

10. Publication of new genera and species should only be in scientific publications and, if possible, only in such as habitually reach systematic botanists.

INDEX KEWENSIS. Supplement vi. is now in progress. There are many incomplete sets. Should any individual or institution have such an incomplete work they may obtain the Supplements i.-v. at the Clarendon Press, Oxford.

JONES, W. S., Hon. M.A. TIMBERS: THEIR STRUCTURE AND IDENTIFICATION. pp. 148. Clarendon Press, Oxford, 1924. In thirteen Chapters and two appendices the author gives a work of practical value to the student of Forestry. There are 165 illustrations of the sections of various woods. Of English woods he says the hardest are Box, Hawthorn, Yew, Hornbeam, then come Oak, Ash, Beech, Elm, Sycamore, and then those termed soft woods—Birch, Horse Chestnut, Poplar, Silver Fir, Spruce and Willow. The histological features are given at length. The first wood described and figured is that of *Tilia europaea*, then Holly, Horse Chestnut, Sycamore, Crab, Hawthorn, Mountain Ash, Cherry, Ash, Box, Elms (these seem scarcely sufficiently elaborated—surely the wood of the various kinds is of unequal value), Plane, Walnut, Oaks (we have *Q. pedunculata*, for contrast that of *sessiliflora* might have been included and *Q. Ilex* is given but not *Q. Cerris*), *Castanea*, *Fagus*, *Corylus*, *Carpinus*, *Alnus*, *Betula alba*, *Populus alba* (here the least frequent and least important Poplar is selected) and *Salix caerulea*. Some of the Indian broad-leaved timbers are included, the American *Liriodendron*, Mahogany, *Robinia*, *Liquidambar* and Greenheart. Part xii. is devoted to the Coniferae. As one might expect the work is attractively produced by the Clarendon Press.

JOURNAL OF BOTANY, 1925. Edited by A. B. Rendle, D.Sc., F.R.S., F.L.S. £1 2s 6d per annum. The vol. lxiii. has a portrait of the Editor. It contains an account of the British Association's visit to Canada by R. D'O. Good and the Editor, p. 1. An excellent paper on the Classification of Dicotyledons by T. A. Sprague, p. 9, 105. Life Cycles, cont., A. H. Church, pp. 15, 78, 132, 193. Dr Forbes's Malayan Plants as a supplement. The Fertilisation of *Ophrys speculum* and *O. fusca* by Colonel M. J. Godfery, p. 33.

Gough Island, G. H. Wilkins, p. 65. A new species, *Apium goughense*, is described by Wilkins and E. G. Baker. Some French Marsh Orchids, Rev. Drs T. and T. A. Stephenson, p. 93. Notes on Jamaica Plants, Fawcett and Rendle, p. 114. New British Bryophytes, H. N. Dixon and W. E. Nicholson, p. 125. New Species from Tropical Africa, S. Moore, p. 145. Notes on the Flora of the Varna district of Eastern Bulgaria, part 2, W. B. Turrill, M.Sc., with new species *Jurinea Gilliatii* and *Veronica euxina*, the latter allied to *spicata*, p. 157. New South African Plants, R. D'O. Good, p. 172. Mosses from Mount Everest, H. N. Dixon, p. 221. New Malvaceae from Brazil, E. G. Baker, p. 239. Identification of Loureiro's specimens in the British Museum Herbarium, S. Moore, pp. 215, 284. References to Notes and some Additions in the London Catalogue, ed. xi., C. C. Salmon, p. 291. E. G. Baker on ditto, 297; A. J. Wilmott on ditto, p. 297. Hieracia in ditto, H. W. Pugsley, p. 302; ditto, Rev. J. Roffey, p. 315. Three Hybrids of *Nigritella nigra*, Col. Godfery, p. 313. The Phylogeny of Violaceae, A. W. Exell, B.A., F.L.S., p. 330. Notes on the Genus *Erythraea*, J. A. Wheldon and C. E. Salmon, p. 345. Species, W. B. Turrill, p. 359. He holds that what we call micro-species " are certainly due to different combinations of genes brought about by crossing and kept constant by apomixis. They are not the equivalent of species in genera which reproduce by normal amphimixis, but are clones and should have special taxonomic treatment." Such are *Rosa*, *Erophila*, *Taraxacum* and *Hieracium* (may we not include *Rubus* and *Bursa*?). "On the other hand certain genera such as *Viola*, *Thymus*, *Verbascum* and *Centaurea* in the S.E. European and Oriental Floras, crossing, without so far as is known any apomixis, help to account for the numerous closely allied groups." Claussen points out the absurdity of naming for taxonomic purposes the segregates arising from *Viola arvensis* × *tricolor* with a possible 5,308,416 combinations. The paper is a thoughtful one deserving close attention and his concluding suggestions are most valuable especially " that in order to describe the species properly every herbarium should have an experimental garden and laboratory."

JOURNAL OF ECOLOGY. Edited by A. G. Tansley. Vol. xiii., 1925; 25/-. Bryophytes and Lichens of Arctic-Alpine Vegetation.

W. WATSON, with lists and notices of a few Phanerogams. Ecology of British Beech Woods, A. S. WATT. Ecology of the Vegetation of Breckland, E. Pickworth Farrow. The Incidence of Species in Relation to Soil Reaction, E. J. Salisbury. Some Impressions of the International Phytogeographical Excursion in New Zealand 1923, E. J. Salisbury. The same excursion of 1924 was spent in the lower Peninsula. The Chalk Grasslands of the Hampshire-Sussex Border, A. G. Tansley and R. S. Adamson. Two Relict Upland Oak-woods in Cumberland, W. Leach. The Vegetation of the Forest of Wyre, E. J. Salisbury. Notes on Photographing Vegetation, E. Pickworth Farrow.

JOURNAL OF THE ROYAL HORTICULTURAL SOCIETY. Vincent Square, S.W.1. Edited by F. J. Chittenden. Orchid Cultivation, Sir Jeremiah Colman, Bt. Some of Canada's Wild Flowers, Lady Byngot Vinny. An extraordinarily vivid account of the floral treasures of that Dominion. Some Wild Species of Tulip, W. R. Dykes. One of the last articles from the Secretary's pen.

KEEBLE, Sir F., F.R.S. Form and Colour in the Garden. Address to the Garden Club, Mance, 1925.

KEW ROYAL BOTANIC GARDEN. Bulletin of Miscellaneous Information. Published by His Majesty's Stationery Office. Contributions to the Flora of Siam, W. G. Craib, i., 7. Notes on Madeira Plants, L. A. M. Riley, i., 26. Notes on the Flora of the Balkan Peninsula, W. B. Turrill. Review of the Work at Kew for the Year 1924, p. 12. Standard Species of the Linnean Genera of *Tetradynamia*, M. L. Green, ii., 49. Diagnoses Speciarum Dioscoreae, Sir D. Prain, and I. H. Burkill, ii., 58. Notes on Cyperaceae, W. B. Turrill, 67. Plants from Bencoolen Sumatra, H. N. Ridley, 76. New species of *Masdevallia* and Allied Genera, F. Kraenzlin, iii., 17. Trinidad Plants, L. A. M. Riley, 133. New Species of *Indigofera*, Transvaal and Swaziland, N. E. Brown, 142, with clavis to 30 species. Contributions towards a Phylogenetic Classification of Flowering Plants, v., J. Hutchinson, iv., 161. Revision of *Alphitonia*, K. W. Braid, i., 68. Sources of Industrial Alcohol, J. H. Holland, v. 193. Critical Notes on Galapagos Plants, L. A. M.

Riley, 216, includes a new *Lycopersicum*. Revision of the Genus *Cassipourea*, A. H. G. Alston, vi. 241. Flora Capensis, Sir W. T. Thiselton-Dyer, vii., 289. Humboldt and Bonpland's Itinerary in Venezuela, N.Y. Sandwich, 295. The Genus *Brachycorythis* Schecht., K. W. Braid, ix., 353. Flora of Siam, D. J. Downe, 367. Includes many of Rolfe's unpublished species. List of Seeds of Hardy Herbaceous Plants and of Trees and Shrubs. App. iv. Kikuyu Grass, *Pennisetum clandestinum*, W. Lyne Watt.

KEW ROYAL BOTANIC GARDENS. Four Hand-lists have been issued this year. (1) Herbaceous Plants, 3rd edition, pp. 170; 2/6. (2) Hardy Monocotyledons; 1/6. (3) Rock Garden Plants; 2/-. (4) Trees and Shrubs, 3rd edition; 4/6. Obtainable at Kew Gardens or from Eyre and Spottiswoode, East Harding Street, E.C.4. The plants are arranged alphabetically, the synonyms being in italics. The native home of the plant is supplied as well as its family, and in many cases the figure of it in the Botanical Magazine, a most useful adjunct. The nomenclature is on sound lines and we appreciate the use of sections for the genus *Prunus*, *Pyrus*, etc. One wonders if it were worth while separating *Arctous* from *Arctostaphylos*, although it is as distinct as some other genera. One wishes that invalid generic names like *Erythraea* and *Epipactis* were rejected. A few slips are noticeable—*Adonis annuus* is used instead of *annua*, but the lists are commendably free from misprints and are in good type. They cannot fail to be useful. All to the good is the use of *Cirsium* not *Cnicus*, *Limonium* (but why not *Statice*, vice *Armeria*), *Linum angustifolium* and *Agrostis capillaris*.

KOORDERS, S. H. Exkursionsflora von Java unfassens die Blutenpflanzen. Vierter Band. Gustav Fischer, Jena, 1925; 4 marks.

LACAITA, C. C. Plante italiane critiche o rare Nuov. Geor. Bot. Ital., 102-114, 1925. *Centaurea leucadea* is a new species.

LACAITA, C. C. Some Critical species of *Marrubium* and *Ballota* and a note on *Colchicum montanum* L. Two rare Spanish species of *Echium*. Journ. Linn. Soc., vol. 48, September 16, 1925. A valuable contribution which suggests that the name *Colchicum mon-*

tanum L. should be abandoned as it cannot be properly applied to either the Spanish or the Swiss plants which Linnaeus cites in the Species Plantarum.

LEE, IDA. EARLY EXPLORERS IN AUSTRALIA. From the Log Books and Journals, including the Diary of Alan Cunningham, botanist, March 1, 1817, to November 19, 1818. pp. 650, with maps and illustrations. Methuen & Co., London, 1925; 21/-. The title on the cover does not suggest that the work is of botanical interest but as a matter of fact Mrs Marriott has given us a valuable piece of botanical biography. At the outset she alludes to the earlier explorations of the island continent by Dampier, Banks and Cook, with their stirring adventures which occupy 166 pages. We should have liked to have seen fuller reference to the great painter, Ferdinand Bauer, who was the official artist on the Banks Expedition. Then comes the account of Alan Cunningham. His father, a native of Renfrewshire, came south, and Alan, the botanist, was born at Wimbledon in 1791. He first went into a law office but, not liking his occupation, he went to Kew as a clerk to Aiton, then preparing his second edition of *Hortus Kewensis*. Here he made the acquaintance of the great botanist, Robert Brown, then librarian to Sir Joseph Banks. In 1814 he was made Botanical Collector to the Royal Gardens and sailed with Captain Chambers in H.M.S. Duncan to Brazil. They sighted Rio on Christmas day and then he and James Bowie spent three months in collecting plants in that country. They returned to Rio where a year was spent in collecting. They sent home both living and dried plants. Cunningham was then ordered by Sir Joseph Banks to sail to New South Wales, and he reached Sydney after a sea journey of 95 days on December 20. 1816. We may say that Cunningham died at Sydney in 1839 where he had been superintendent of the Botanic Gardens for two years. Robert Brown dedicated the genus *Cunninghamia* to him and Endlicher's *Alania* was also given in his honour. His brother, Richard, also a botanist, was murdered by natives in the interior of Australia in 1835, when he was on an expedition under Sir Thomas Mitchell. Mrs Marriott (Ida Lee) has rendered a service to Botanical Biography in publishing at such length (pp. 167-628) and with such care Cunningham's Log Book. He came back to England in 1831 after an absence of 17 years and resided at Strand-on-the-Green close to Kew, till he was invited to be superintendent of the Sydney Garden, which post however did not appeal to him. He was an explorer and did not care to be tied by the leg. He visited New Zealand where he got a chill from which he never recovered, and in a letter (which is quoted) he writes to Robert Brown " a letter from a poor, decrepit, prematurely old traveller." Not only do Australian flowers and trees bear his name, but there is a county named Cunninghamia as well as a Mount Alan and a Mount Cunningham. The volume is a worthy tribute to a great Australian explorer and botanist.

LINNEAN SOCIETY LIBRARY CATALOGUE. Prepared by that born indexer, Dr B. Daydon Jackson. Longmans & Co., 1925; 25/-.

LINNEAN SOCIETY JOURNAL. Vol. xlvii., 1925. On the Occurrence and Distribution of *Festuca ovina* L., sens. ampl. in Britain, W. O. Howarth, M.Sc. p. 29, tt. 2. See under *Festuca ovina*. Phytoplankton of the English Lakes, W. H. Pearsall and W. Harold Pearsall, D.Sc. Ditto of Shropshire, Cheshire and Staffordshire. B. M. Griffiths, D.Sc.

LINNEAN SOCIETY PROCEEDINGS, 1925. These include Flora of Canada described by the President and Mr R. D'O. Good. The Tropical Elements in the Arborescent Flora of the Transvaal, Dr J. Burtt-Davy. A Virescent *Delphinium*, Prof. R. R. Gates. Cytology of *Tulipa*, C. F. Newton; Primula Hybrids, R. J. Chittenden. A Unique Feature in the Petal of *Ranunculus*, J. Parkin. This alludes to the high polished surface of the petal. Remarks on the Flora of Southern Rhodesia, F. Eyles. On the Seedling Structure of *Tilia europaea*, Dr H. S. Holden and S. H. Clarke. Vegetation of the Amazon Basin, Prof. R. R. Gates. On the Fertilisation of *Primula vulgaris*, B. Marsden Jones.

LISTER, A. A MONOGRAPH OF THE MYCETOZOA: A Descriptive Catalogue of the Species in the Herbarium of the British Museum. 3rd ed., revised by Miss Gulielma Lister. pp. xxxii., 296, tt. 223. British Museum, 1925; 31/6.

LLOYD, NATHANIEL. GARDEN CRAFTMANSHIP ON YEW AND BOX. pp. 36, tt. 54. Ernest Benn & Co., London, 1925; 15/-. The pages, few as they are, of this delightful book teem with practical advice, the result of intimate knowledge. His advice about clipping is well worth the cost of the volume. Naturally this, in topiary work, is of vital importance. The beautiful photographs well illustrate various examples both in Yew and Box, and others exhibit methods of planting or trimming. A charming example of a tank garden with water lilies, enclosed with a dignified wall of yew with pillars and archway of the same tree, is singularly pleasing, so, too, is the yew hedge, round a rose garden, with piers and buttresses at Great Dixter. Monstrosities are shown as a "Cone and Britton Finial." The Pond Garden at Hampton Court is a graceful example. The celebrated Topiary Garden at Earlshall seems too crowded. The views also include the Hatfield Maze. The book is eminently fitted for a present which is sure to give pleasure to the recipient.

LOTSY, Dr P. L. Lectures on Evolution considered in the Light of Hybridisation. pp. vii., 67, tt. 4. Canterbury College, New Zealand, 1925. See Nature ii., 625, 1925. New Zealand possesses, according to Dr L. Cockayne, no fewer than 206 wild hybrids between big species. In his lecture Dr Lotsy preceded his statements with a very trenchant examination of theories of transmissible variability, whether neo-Lamarckian or mutationist.

LOTSY, Dr P. L. and KOOIMAN, H. N. Resumptio Genetica. Vol. i., pp. 1-112. Nijhoff, The Hague, 1924-25; 24 fl.

MCGILL and SMITH. Research Annual, Ayr. pp. 104. 1925; 1/-. Gives photographs of many interesting agricultural crops. It may be noted that seeds of *Poa palustris* are offered at 3/- per pound. In cultivation it proves to be a good bottom grass. *Trifolium subterraneum* and *T. fragiferum* (both of which are native species) are recommended. Some interesting branched forms of *Lolium perenne* L. are illustrated. They have panicles like Meadow Fescue but are stated to be pure. There are some valuable remarks on selection and breeding of pasture plants.

Mann, M. C. Chromosome number and Individuality in the Genus *Crepis*. Univ. Calif. Publ. Agr. 2, 297-314, 1925.

Marie-Victorin. Les Lycopodinées de Quebec, 3, 1-121. Lab. Bot. Univ. Montreal, 1925. There are not many new varieties.

Marriott, St John. British Woodlands as illustrated by Lessness Abbey Woods. G. Routledge & Sons. pp. 72, 1925; 2/6. This gives a general survey of the flora and fauna, map, charts, photographs, explanatory notes, historical preface, botanical survey and numerous lists representing the various groups of plants and animals recorded for the woods. Mr C. H. Grinling writes the Introduction. We congratulate Mr Marriott upon the production of this very useful publication which deals thoughtfully and adequately with the subject. 328 species of Flowering Plants are mentioned, 3 Ferns, 111 Mosses, 32 Hepatics, 241 Fungi, 12 Lichens, and 46 Mycetozoa. 13 Mammals, 64 Birds, 4 Reptilia, 4 Amphibia, and 16 Mollusca are included. Some nice photographs are given and the whole work is cram full of interest.

Meisel, Max. A Bibliography of American Natural History. The Pioneer Century, 1769-1865. The Role Played by the Scientific Societies, Scientific Journals, Natural History Museums and Botanic Gardens, State Geological and Natural History Surveys, Federal Exploring Expeditions in the Rise and Progress of American Botany, Geology, Mineralogy, Palaeontology, and Zoology. Vol. i. pp. 244. The Premier Publishing Co., 626 Broadway, Brooklyn, New York, 1924. This is clearly printed and well set up and arranged in alphabetical order. The front portion contains nearly 1500 titles relating to over 600 names of active workers in one branch or another of Natural History. There are over 700 titles of the Publications relating to the History, Biography and Bibliography of American Natural History. When needed cross references are given and there is a Geographical Index to the Annotated Bibliography. It fills a gap in needed Reference Books and the next volume is looked forward to with interest.

Moore, S., B.Sc. A Third Contribution to the Composite Flora of Africa. Journ. Linn. Soc. 257, 1925. Many species of *Vernonia* are described.

MORSE, RICHARD AND BALMER, RAY. BRITISH WEEDS: Their Identification and Control. A Practical Handbook for the Use of Estate Owners, Farmers, Gardeners, and Students of Agriculture, Horticulture and Field Botany. Demy 8vo, pp. 207, tt. 8. E. Benn & Co., London, 1925; 10/6.

NATIONAL TRUST FOR PLACES OF HISTORIC INTEREST OR NATURAL BEAUTY. Report for 1924-25. pp. 88. 7 Buckingham Palace Gardens, Westminster, S.W.1. Photograph showing the face of Scawfell and Mickledore from the Pulpit Rock, and of Chadworth Roman Villa are given. Cissbury Ring, Stony Jump, Surrey also are now acquired. Additional land has been obtained from Hatfield Forest, Box Hill and Stoke Poges. The additions include Scawfell, above 2000 feet on the contour map; Chadwell Manor, near Birmingham, of which a beautiful photograph is given; The Common, St Helens; Hogback Wood Penn, Bucks; Kelsich Scar, White Mon Intake, Oulney Common Bungay, Little Bookham and Bank's Common, Surrey; Crow Park, Cocksholt Wood and Cakle Head, Derwentwater.

NATURE. Weekly, 1/-. Macmillan & Co., St Martin's Street, London, W.C. This renowned scientific periodical maintains its high reputation. Among other articles of special interest to the botanist is an appreciative and able note of the "Work and Influence of the Royal Botanic Gardens, Kew," which date from 1760. A special number was devoted to the Centenary of Huxley, May 9, and appreciations are given by Ray Lankester, Poulton, Thiselton Dyer (which gives interesting details of Dyer's early studies), Bower, Vines, Bateson, Arthur Thomson, Sir A. Keith, Edward Clodd, H. A. Osborn, Smith Woodward, Prof. D. M. Watson, Prof. W. W. Watts, Prof. E. W. MacBride, C. Lloyd Morgan, Patrick Geddes, H. E. Armstrong, Sollas, Stephen Paget, and others—a great symposium. Yeast—A Presidential Address to the Royal Microscopical Society, January 21, 1925. A. C. Chapman, F.R.S., p. 839. The Centenary of the Discovery of Benzene, p. 1001. Evolution and Intellectual Freedom (ii. 69), with statements from a large number of representative scientists—a Nasmyth Hammer to crack an addled house sparrow's egg.

OSTENFELD, Prof. C. H. Botanisk Have Gennem, 50 aar, 1874-

1924. Our Honorary Member has here given a charming account of the garden which he so ably administers. It was a privilege I much enjoyed to be conducted over it by himself and to see so many plants of interest growing in as natural a position as possible. The Library has 25,000 volumes and the Herbarium is very rich especially in the plants acquired on the various polar expeditions.

PHARMACEUTICAL BOTANY. "BOTANY WITHOUT TEARS." For Students preparing for the Qualifying Examination of the Pharmaceutical Societies of the British Empire. pp. 300. Chemist and Druggist, 42 Cannon Street, London, E.C., 1925; 5/-. The gist of this practical and useful text-book has appeared from time to time in the pages of that excellently edited paper. The writers of it have wisely made use of plain and easy expressions and have avoided repellent botanical terms and definitions as far as possible. Even that obnoxious phyllotaxy—a dreadful stumbling-block to the beginners—is now simplified. The student is led on through the Processes of Life Metabolism, Nucleus, Evolution, Thallophyta, Spirogyra, Fucus, Fungi, Bacteria, Yeasts and Moulds, to the Higher Fungi, in which proper attention is given to the Life History of the Ergot (I once heard it defined as " an insect alighting on an ear of rye "). Then on to Liverworts, Mosses and Pteridophyta. We are glad to see *Dryopteris Filix Mas* is used as in the Pharmacopaeia. By a slip on p. 65 *Aspidium* is used on the figure 38. A good description of its growth and development is supplied. Illustrative examples are mainly selected from Medicinal species. Then come some useful chapters on the Flowering Plant and its parts. For Fennel the specific name *capillaceum* is given. It is superseded by *F. vulgare* Mill. or, to those who like tautonyms, *F. Foeniculum* Karst. The illustrations are excellent and their effect is sometimes much enhanced by having a black back-ground. A little more care might have been used in writing the specific names with or without capitals for we have *Sambucus Nigra* which does not need a capital and *Mentha pulegium* which does. A few pages are devoted to physiology and a very useful explanation of ions. Water dissociates into ions and although their proportion is exceedingly small this is its chemically " active " part. $H_2O = H +$ Hydrogen ion and OH— Hydroxyl ion. " Neutral " water contains about one ten-millionth.

Acids increase the hydrogen ions, alkalies the hydroxyl ions. Ph numbers are used to indicate hydrogen ion concentration, thus neutrality is Ph 7—and the student is shown the part this plays in Plant Constituents. The book, if carefully studied, cannot fail to be a most useful text-book.

Phillips, Reg. W., M.A., D.Sc., LL.D. On the Origin of the Cystocarp in the Genus *Gracillaria*. Ann. Bot. xxxix., 787, 1925. On Vacuolar Pseudopodia in a species of *Callithamnium* from Menai Straits. Revue Algologique, 14, 1925. On the Genera *Phyllophora*, *Gymnogrongrus* and *Ahnfeldtia* and their Parasites. New Phytologist, 24, 241, 1925.

Prain, Sir David, F.R.S. Government Botanic Gardens. The Sir George Birdwood Memorial Lecture. Gardeners' Chronicle. 39. 62, 78, 97, 109, 132, 1925. There is much of permanent interest in this excellent lecture. Sir David holds that the garden of Theophrastus was much nearer in purpose to a modern Botanic Garden than any Physic Garden of the sixteenth century.

Rayner, J. F. List of the Alien Plants of Hampshire and the Isle of Wight. Proc. of the Isle of Wight Natural History Society. President, J. Groves, Esq. Vol. i., 229, 274, 1925. Includes *Papaver Rhoeas* L., var. *violaceum* Bréb., Swaythling. *Arabis Turrita* L. *Brassica gallica* (Willd.) Druce. Christchurch, Miss Rooke. *Trifolium spinulosum* Dougl. *Cotoneaster Simonsii* Baker, Wootton. New Forest. *Saxifraga Huetiana* Boiss. *Baccharis halimifolia*. *Senecio Cineraria* × *Jacobaea*, Newport, Long. The list is an important one and is carefully compiled. Its author is to be highly commended.

Record, Prof. S. J., and Clayton, D. Mell. Timbers of Tropical America. pp. xviii., 610, tt. 50. Yale University Press. Oxford University Press. 1924; 10 dollars.

Rendle, Dr A. B. Presidential Address of Linnean Society. See Proc. 35, 1924. Refers to Linnaeus Hort. Cliffort. and his plants in the British Museum collections.

RIDGE, W. T. BOYDON. Botany of North Staffordshire. See Rep. North Staffs. Field Club, 1918-23.

RIDLEY, H. N., F.R.S. THE FLORA OF THE MALAY PENINSULA. Vol. i., pp. xxv., 918, 1922; £3 3s. Vol. ii., pp. 672, 1923; £2 2s. Vol. iii., pp. 405, 1924; £2 2s. Vol. iv., pp. 383, 1924; £2 2s. Vol. v., pp. 470, 1925; £2 2s. Enumerates about 6000 species of which half are said to be endemic.

ROBBINS, WILFRED W. THE BOTANY OF CROP PLANTS. 2nd edition. pp. xxi., 674. P. Blakiston & Son, Philadelphia, 1924; 3.50 dollars.

ROLFE, R. F. and ROLFE, T. W. THE ROMANCE OF THE FUNGUS WORLD. An account of Fungus Life in its Numerous Guises, both Real and Legendary. pp. xx., 309, tt. 31, 1925. Chapman & Hall, London; 12/6.

ST JOHN HAROLD. Review of Hagstrom Potamogetons. Bull. Torr. Bot. Club, 460, 1925. Criticises Hagstrom's imperfect pollen-characters and more or less abortive pistil as evidences of hybridity. The reviewer does not feel that barren or unfertilised Potamogeta must be hybrids. He says Hagstrom places more emphasis on stem-anatomy in identifying the species and hybrids, but the reviewer thinks this is of doubtful help. In Rubi the presence of imperfect pollen is of no value in separating the hybrids from true species. Even in good species none have 100 per cent. of perfect pollen, the majority having 60-90 per cent. He states that pine-pollen has been blown hundreds of miles from the nearest known trees.

SALISBURY, Dr E. J., D.Sc. International Phytogeographical Excursion to Switzerland. See Proc. Linn. Soc. 20, 1924. The Incidences of Species in Relation to Soil Reaction. Journ. Ecol. xiii., 149, 1925.

SANDERS, T. W. THE FLOWER GARDEN: Its Design, Formation and Management. 5th edition. pp. 480. W. H. & L. Collingridge. London, 1925; 15/6.

SCHAFFNER, JOHN H. Experiments with various Plants to produce Change of Sex in the Individual. Bull. Torr. Bot. Club, 52, 35, 1925. *Thalictrum dioicum*, *Cannabis sativa*, *Morus alba*, *Arisaema triphyllum* and *A. Dracontium* were among the plants experimented on.

SCHLICH, Sir W. MANUAL OF FORESTRY: including Mensuration and Valuation. Vol. iii., ed. 5, revised, and for the greater part rewritten. pp. viii., 383, 1923. Bradbury Agnew & Co., Ltd.; 20/-.

SCHINZ, HANS. Beitrage zur Kenntnis der Schweizerflora, xx. Schinz, Hans and Thellung, A. Weitere zur Nomenklator der Schweizerflora, ix. A large number of tautonyms are given and some new ones formed. They give a large list of what they consider to be " totgeboren " names which include *Phragmites vulgaris* (Lam.) DC. This is obsolete if tautonyms are allowed, *i.e.*, *Phragmites Phragmites* (L.). *Polygonatum angulosum* (Lam.) DC. is also superseded by *P. Polygonatum* (L.) Jiras. *Taraxacum vulgare* (Lam.) Schrank = *T. Taraxacum* (L.) Karst. The saving of confusion by adopting tautonyms is here quite evident. Mr Sprague has recently dealt with some of the " totgeboren " names.

SCHWERIN, FRITZ VON. Revisio Generis Sambucus. Mitt. Deutsch. Dendr. Ges. 194-231, 1920. Includes *S. nigra*, f. *sub-integra* and *S. Ebulus*, f. *angustifolia*.

SEEDS, THE LONGEVITY OF. See Rep. Fourth International Seed Testing Congress, in Cambridge, 1924. H.M. Stationery Office. Kingsway; 11/6. Dr Degen states that the seeds of *Nelumbium* hold the record, but *Cassia bicapsularis* germinated after 87 years and *C. biflorus* after 84 years. Mr R. Dorph-Petersen found that in a six-inch cube of earth taken from the top-level of soil there were more than a hundred thousand seeds.

SETCHELL, WILLIAM ALBERT. American Samoa. Vegetation of Tutinta Island. Carnegie Publ. 341, 1924. There are a large number of new species.

SCOTT, Dr DUKINFIELD, F.R.S. The Transformations of the Plant World in Geological Time. Lecture (Section K.) British Association Meeting at Southampton. The lecturer said four such great transformations are known—(1) From Marine to Land-flora which may have occurred about the Upper Silurian Period but which some botanists put much earlier. (2) From the early Land-Flora to the typical Paleozoic Vegetation. Time about the Middle Devonian. (3) From the Paleozoic to the Mesozoic type of flora. Time Permian to Trias. (4) From typical Mesozoic to the modern type. Time Cretaceous. These transformations, as we observe them, are apparent not real. The actual origin must always have lain much further back than the date of the conspicuous transformation. See Nature, ii. 145, 1925.

SHELTON, LOUISE. BEAUTIFUL GARDENS IN AMERICA. 4to. C. Scribner & Sons, New York; 42/-.

SHEPHERD, J. C., and JELLICOE, G. A. ITALIAN GARDENS OF THE RENAISSANCE. Folio. Ernest Benn, Ltd., 1925; 105/-.

SIPKES, C. Price List of Plants (Perennials) Wild in Western Europe. Ziglweg, 82, Overveen, Holland. Shows a view of *Artemisia Stelleriana* at Penzance.

SKENE, Dr MACGREGOR. Flowers and the Sun. Lecture to the Aberdeen Natural History and Antiquarian Society. See Gard. Chron. 173, 1925.

SOCIETY FOR THE PROMOTION OF NATURE RESERVES. Handbook for 1925. President, The Viscount Ullswater, G.C.B. Hon. Secretaries, G. F. Herbert Smith, D.Sc., Natural History Museum, S.W.7; Lord Henley, 49 Montague Street, W.1; E. G. B. Meade Waldo, Stonewall Park, Edenbridge, Kent.

STENHOUSE, ERNEST, B.Sc. A CLASS BOOK OF BOTANY. pp. 514. Macmillan & Co., London, 1925; 7/6. While one complains of the fewer number of field botanists, yet if one judges by the output of class-books, the science must have an increasing number of devotees and it requires some temerity to add to the list. However, Mr Stenhouse need make no apology for the present well written, well printed and well illustrated manual especially as it contains several hundred of recent examination questions set for a large number of examining boards. The illustrations are excellent, especially those of the Trees, but an original photograph of our *Ranunculus peltatus* might well replace the archaic figure of the Water Buttercup taken from Figuier which has leaves unlike any of our forms. We are glad to see that the sequence of Bentham is followed rather than that of Engler. A phenological list is appended.

Stephenson, Rev. T., D.D., and Stephenson, T. A., D.Sc. Some French Marsh Orchids. Journ. Bot. 93, 1925. Include (1) *O. sesquipedalis* Willd. (2) *O. praetermissa* Druce, which occurs not only in Britain but in Holland. The authors found it in three stations north of Paris. Near Isle Adam it grows with *incarnata*, *latifolia*, *militaris* and *maculata*. Of these it is the most numerous. Near Coye it grows with *latifolia* but no *maculata*. Near Arronville it grows in large numbers with *maculata*, *latifolia*, *militaris* and *incarnata*. All these are precisely similar to British forms. Messrs Stephenson think that Camus has treated *O. praetermissa* as typical *incarnata*, but they consider *incarnata* to be very different from the *praetermissa-sesquipedalis-foliosa* series. It is a valuable contribution to our knowledge of the group.

Stiles, Walter. Phytosynthesis: The Assimilation of Carbon by Green Plants. pp. 268. Longmans, Green & Co., London, 1925; 16/-. In this book an attempt is made to fill up one of the existing gaps by presenting a comprehensive survey of the subject of Phytosynthesis. It is intended primarily for students reading for University degrees in which Botany is a subject, and for research students, but it is hoped that it will appeal also to the general botanical public as well as to chemists and physiologists. There is an excellent bibliography of upwards of 870 references. The volume is well printed, and for the class of student mentioned will prove of great service since the labour of consulting scattered papers will be saved. In one handy volume is packed an immense amount of information. It is of too highly a technical character to be reviewed here, but we can heartily congratulate its author upon so well filling the gap in botanical literature which was his aim.

Tahourdin, C. B. Native Orchids of Britain. Descriptive notes on all species together with some hybrids and abnormal forms with numerous photographic illustrations. pp. 114. Grubb, Croydon, 1925; 5/-. This little work, which is illustrated with some good photographic reproductions is, as the author says, written by an amateur for amateurs. We notice that although he cites the various articles in the Journal of Botany, the pages of our Reports, in which several new plants were first described, are not alluded to. He has followed the views (mistaken as I hold them to be) of Colonel Godfery regarding *Orchis maculata* and *O. Fuschii* (as it is misspelled—the spotted Orchis was named after Fuchs, in whose early work it is figured). Again the name *Epipactis violacea* is used in defiance of the earlier trivial and there are also many other archaic names employed. But Mr Tahourdin's object was to give some illustrations from living plants and he has included some interesting forms and popular notes about these species. We may say that *Neotinea* occurs in two distinct colours—the earliest figure of the Irish plant was pink, but that is not the common form in Ireland. As regards *Epipogon*, the account of it, published in our Reports, might have been consulted or quoted, containing as it does some precise particulars on the occurrence of this very rare Orchid in Britain. *Corallorrhiza* is not confined to boggy woods in Scotland: there it is as commonly dunal. We gladly welcome any helper in the field of Orchid investigation in Britain and we hope Mr Tahourdin may go on with his investigations of the living plants and also their history, description and nomenclature in botanic literature.

Tahourdin, C. B. Some Notes as to British Orchids. A single specimen of *O. hircina* is recorded from Gloucestershire.

Thurston, E. and Vigurs, C. C. Note on the Cornish Flora. Reprinted from the Royal Institution of Cornwall, pp. 455-469. 1925. Contains the recent additions to the Flora. *Cnicus* should not be used for the Plume Thistles—*Cirsium* is the valid name.

Trelease, Dr Wm. Monograph of American Oats. Vol. xx., tt. 420. Museum of Nat. Acad. Science, U.S.A.

Taunton Natural History Society. Report of the Botanical Section. This gives evidence of excellent work being done, some 360 notes being sent in for the year 1924. *Erysimum orientale* Mill. is in error, applied to *Conringia orientalis*. Miller's plant is quite a different species. We are glad to see that *Eriophorum gracile* persists.

THELLUNG, DR ALBERT. Drei neue *Amarantus* Arten aus Bolivia =*A. Asplundii* (after Dr Erik Asplund of Upsala) and *A. Bucktienianus*. The latter is called after Dr O. Bucktien of Bolivia. Epilobes hybrides from Switzerland and Baden. Le Mond des Plants. September-October (December 23) 1924; November-December (February 14, 1925), 1924. *Siler*, *l.c.*, March-April 1925 shows that *Siler* Mill. Gard. Dict. Abr., 175, belongs to *S. montanum* Crantz. Other species are *S. garganicum* Thell., *S. Zernii* Thell., *S. siculum* Thell., and *S. Nestleri* Thell., while *Siler trilobum* belongs to *Laser* Borkh. 1795, which has three species—*L. trilobum* Borkh., *L. divaricatum* Thell. and *L. cordifolium* Thell. But surely in this we should use *Laser Siler* (L.), comb. nov. rather than *L. trilobum* which does not retain the earliest trivial. Had the genus *Siler* been retained for this species *Siler Siler* (L.) would have been the name to use for the Cherry Hinton plant, which is now extinct. Kulturpflanzen-Ergenschaften bei Un Krautern, 1924.

UNITED STATES DEPARTMENT OF AGRICULTURE. Continues to produce a most wonderfully large and valuable output. Among the numerous Bulletins is one on Bamboos: Their Culture and Uses in the United States (N. 1329. May 1925). We learn that Bamboo species number 490 belonging to 33 genera. The nomenclature is a thorny one, the Giant Timber Bamboo, referred to in literature by half a dozen different names and described as a plant 8-10 feet high or a tree 50-60 feet high is *Phyllostachys bambusoides* Sieb. and Zucc. A photograph of a typical grove of them at Savannah, Georgia, is shown. Bulletin 1331 treats of the Madonna Lily, *Lilium candidum* and gives excellent methods for its successful cultivation. Bulletin 1443. Cultivated Grasses of Secondary Importance. These include *Bromus inermis*, *Sorghum halepense* (L.) Pers., *Poa trivialis*, *Agrostis stolonifera* and other species of which the salient facts are given under the respective species in the earlier part of this Report.

VINES, DR S. H. Reminiscences of German Botanical Laboratories in the Seventies and Eighties, as a student of Sachs in Würzburg in 1877 and 1880 and of De Bary at Strassburg in 1879 and 1881. New Phyt. xxiv., 1-8, 1925.

VOUK, Prof. and Dr V. Uredio in Acta Botanica Inst. Bot. R. Univ. Zagrebensis. Vol. i., 1925. We congratulate our Croatian friends on this excellent publication.

WARMING, EUGENE, **Ph.D.** OECOLOGY OF PLANTS. An Introduction to the Study of Plant Communities. Assisted by Martin Vahl. Prepared for publication in English by Percy Groom, M.A., D.Sc., and Isaac Bayley Balfour, F.R.S. pp. 422. Second impression. Clarendon Press, Oxford, 1925. This important text-book has been reviewed from time to time and is acknowledged to be the standard book on a subject which Dr Warming, whose obituary will be found in *Rep. B.E.C.* 546, 1924, had made peculiarly his own. This classic volume, a most valuable addition to botanical literature, the first edition of which appeared in 1909, has paved the way for the extraordinary development of the subject among botanists in all parts of the world. In Britain the subject has been taken up by many botanists including Tansley, Moss, Adamson, etc., and from time to time we have drawn attention to the oecological treatment of various tracts of country by this school of workers. In America conspicuous oecologists, such as Cowles and Clements, have added much to our literature and the latter especially has created an enormous number of new terms which need a lexicon of their own. In Germany Drude and Graebner have been industrious exponents, as in Switzerland have Schroeter and Roebel. Belgium had its Massart and France its Flahault and they have done yeoman service. Notwithstanding the vast output of oecological literature Warming's text-book still holds the field and the Clarendon Press has earned the thanks of thousands of students by reproducing it in such excellent style. One is again and again struck with the realistic touches Warming gives. Under " Nanism," which has nothing Zolaesque in it, he actually says of mountain plants that the " size of the flower " which by a cursory observer is often said to be larger than in the lowland plants, is a subjective impression, probably aroused by the small size of the vegetative organs, and in many instances is not supported by actual measurements. There are cases, especially in Zetland, where this statement does not hold true, as the flowers of *Lathyrus pratensis* are nearly 50 per cent. larger than the southern form, and the florets of *Poa trivialis* 15 per cent., and of *Trifolium repens* about 30 per cent. Nor is it the case in the mountain forms of *Cerastium vulgatum* where there is no doubt of the actual difference in the size of the petals. In this work, as in others, the nomenclature is not always sound. The generic name *Psamma* is used instead of *Ammophila*; indeed it gives the term *Psammetium*, instead of *Ammophiletum*. *Triticum* is used instead of *Agropyron* so we should have *Agropyretum*. *Armeria*, instead of *Statice*, *Bromus mollis*, instead of *B. hordeaceus*, *Festuca valesiaca* for *F. Vallesiana*, *Carex stricta* for *C. elata*, *C. rostrata* for *C. inflata*, *Aira* for *Deschampsia*, *Statice* for *Limonium* are examples. What amazes one is the vivid descriptions of the various habitats and their occupants not only of Europe but of the World. Other works may supplement this, but in Warming's book on Oecology we have the foundation and the source of the development of Field Botany to which all students must have recourse.

Webster, A. D. Fancy Woods: Their Uses and Value. Gard. Chron. ii., 352. He speaks highly of the wood of *Cotoneaster frigida* (which is good for golf-heads) and of Laburnum and Elder. *Euonymus* is also good. The wood of *Robinia* is of a beautiful colour. One may say that the plinth for the silver ewer which the writer gave to Christ-Church on their fourth centenary was made of *Robinia*. It is of remarkable lasting properties when in contact with soil. Apple wood is valuable for saw-handles, and when of good reddish colour is sometimes used instead of *Erica* for Tobacco pipes.

Weiss, Prof. F. E., D.Sc., F.R.S. On the Leaf-tissues of the Graft-Hybrids *Crataego-Mespilus Asniersii*, and *Crataego-Mespilus Dardari*. Mem. & Proc. Manch. Lit. & Phil. Soc., July 19th, 1925. Plant Structure and Environment, with Special Reference to Fossil Plants. The Presidential Address to the British Oecological Society, January 10, 1925. Journ .of Ecology, xiii., 301, 1925.

Wheldon, J. A. (the late), and Wilson, A. West Lancashire Fern Notes. Additions and Extinctions. Lanc. and Chesh. Naturalist, May, 1925. Several new county records are given which are noticed under the respective species. *Drosera anglica* and *Carex limosa* have been destroyed owing to the drainage of the Cockerham Moor.

Proceedings of the Isle of Wight Natural History Society for 1924. Vol. i. County Press, Newport, 1925; 3/-. Contains a List of the Alien Plants of Hampshire and Isle of Wight by J. F. Rayner, F.R.H.S. A large and valuable list. Some of these are noticed in our New Records.

Wild Flower Magazine. Edited by Mrs Dent. Bi-monthly. The Society, of which it is the organ, continues a most vigorous existence. A great improvement in the identification of plants has taken place, but one doubts if the Alpine Columbine has been found in Strathtay. The *Euphorbia Esula* for Northumberland, Sussex, etc., is probably *E. virgata*. *Linaria Pelisseriana* and *Stachys germanica* are also errors. Interesting papers are contributed on South Devon Orchids by Paul Furse, on Orchids by C. B. Tahourdin, The Speedwell by Dr Power, A Parson's Holiday by the Rev. H. H. Harvey, and Flowers of the Taurus by Lt. J. Codrington. Miss Dent found the local *Carex ornithopoda* in the grounds of her house at Flass.

Willis, J. C. A Dictionary of the Flowering Plants and Ferns. Fifth Edition. pp. lvi., 727. Cambridge University Press, 1925; 20/-. In our Report for 1919, pp. 617-8, we warmly commended the fourth edition of this most excellent work. There we said " for many years Lindley and Moore's *Treasury of Botany* was an almost indispensable occupant of the shelves of the botanist and it is still handy to keep within reach; but in a more specialised manner and with stricter limitations, this new edition of Willis' Dictionary should be in every scientific or reference library. This fifth edition has 28 additional pages. We notice that *Epipactis* Adans. is alone used, but *Epipactis* Haller En. St. Helv. i., 77, 1742, brought into the sphere of citation by Borck., which is the older name of *Goodyera*, is omitted. We are sorry to see *Erythraea* still used instead of *Centaurium* although the latter is properly inserted on p. 129. Gilibert is given as the author but it was previously used by

Hill. The graminaceous *Cuviera* is not mentioned. Under *Vaccinium Myrtillus* the English name, Huckleberry, used in Bucks and Beds, might well be added as it was the origin of the American name so extensively used in the Northern States not only for *Myrtillus* but for species of *Gaylussacia*. One is also pleased to see that *Dryopteris*, following Christensen, is used for the Male Fern. *Gymnogramma* is however employed instead of *Anogramma* (which is omitted) for the Jersey Fern. *Cirsium* is correctly used for the Plume Thistles. How long will our English botanists be in coming to this simple point and not use *Cnicus*, which has a single species, *Cnicus benedictus*. Its use for the plume thistles is by no means a blessing. The oldest name for the Ivy-leaved Bell-Flower, *Cervicina hederacea*, is omitted, yet its genus was properly described. It had species put under it, and one of them was well figured by Redouté in Delile's sumptuous Flore d'Egypt, yet *Wahlenbergia*, an incorrect name, of much later date, published in a seed list, is preferred and alone cited. The book itself is a mass of well digested information. It is compact, excellently printed and, as a supplement, there is a most useful and valuable key to the families of flowering plants. The book is a necessity for every scientific library. One can speak of it in the highest praise.

WILSON, E. H. AMERICA'S GREATEST GARDEN. The Arnold Arboretum. pp. 126, tt. 50. The Stratford Comp., Boston, Massachussetts; 3 dollars. As a branch of Harvard University, about five miles from the State House in Boston, is this wonderful area which, mainly through the personal devotion of its great keeper, Charles Sprague Sargent, whose portrait is appropriately appended to the volume, is now one of the most wonderful gardens in America, if not in the world. Although connected with the University the threads which bind it to the teaching department are of the flimsiest. It pursues its own purpose of cultivation, acclimatisation and study of woody perennials for which purpose it was expressly founded in 1872. In half a century it has known only one director. As Mr Wilson truthfully and eloquently says, Sargent's energy, ability, enthusiasm and devotion have made it what it is to-day. It is known wherever plants are loved and studied, and of its beauty gardens in every land have shared. Towards bringing man nearer to man this garden is a potent force. It exists for service, which service knows no boundary of race or creed. It is a bit of beautiful New England forever preserved as a garden, a garden where bosky hills, wooded knolls, steep cliffs, open meadows, and valleys are fragrant with the odours of foliage, flowers, and fruit.' It owed its origin to the imagination of George R. Emerson and to the munificence of a merchant, Mr James Arnold. He gave a quarter of his residuary estate in trust to Emerson and two others to the value of about £28,000. 125 acres were devoted to the purpose. It was land worn out in a pastural sense, partly covered with plantations of native trees and nearly ruined by excessive pasturage. The income allowed was less than 3000 dollars a year—so it was not a very rosy prospect which was before Sargent on his appointment, but big men do big things. Then when Olmsted was constructing a park for Boston came the opportunity of a great onward movement, and in 1882 the city agreed to add certain lands, to be responsible for taxation. and to make and maintain certain roads and walks in return for which the University agreed to extend admission to visitors at the same times and conditions as the Parks and to pay a yearly rent of one dollar—the agreement to run for 1000 years and to be then renewed for ever. Now its area is 250 acres. It is a beautifully diversified garden for it has the pleasant Bossy Brook running through it; there is Peter's Hill and Hemlock Hill, the latter having steep cliffs and being covered with a dense canopy of Hemlocks, through which here and there rise White Pine, Birch or Sugar Maple, and then there are the rejuvenated members of the old forest of many kinds of oak. The most recently planted trees are grouped as far as possible, into their families and genera. You may begin with Magnolia at the Jamaica Plan Gate and end with the Coniferae at Walter Street Gate. How it has prospered is shown by the fact that now the Arboretum contains between five and six thousand species and varieties belonging to 87 families and 325 genera. These are all from the Northern Hemisphere. It is a little surprising to hear that no tree from S. Chili or New Zealand proves hardy in the Arboretum. We must refer members to this delightful work itself where the arboreal features are so eloquently and graphically described. To enable one more fully to realise the Arboretum's charm very beautiful illustrations by the author are included. That of the Pond with its flowering cherries is elegantly dainty. Spring, Summer, Autumn (illustrated with a branch of fruiting *Berberis vulgaris* and the American Mountain Ash), and Winter (showing the naked Birch in all its beauty) are shown. Boston, too, has its Cherry blossom festival, and Crab Apples their opulence. Who would not like to go there in " Lilac time " though very far from London, and instead of Nice go to view the carnival of Azaleas at the Arboretum. To me the glories of the Azaleas in Japan far exceed in beauty the cherry with its too formal loveliness. The Hawthorns must not be forgotten. Whoever could visit Arnold and omit paying due worship to the thorns and to the director who has " Dahlstedted " them, albeit there is only one edible one cultivated there. Curiously the Rhododendron, in all its multitudious variations, does not take kindly to Boston, but Kalmia makes up to some extent. The Conifers are a group to themselves, and there are many climbing plants grown there, while even the road borders are made beautiful with low-growing species of Rose and Juniper. One may add the function of the establishment does not end with the Arboretum. The Herbarium contains a quarter of a million specimens, the library 35,000 volumes and 8000 pamphlets and nearly 10,000 photographs. Such is what this charming volume discloses. When will Oxford attempt to combine the work begun by Danby in 1621 and utilise some of the many available acres in the near vicinity to some such a purpose as has been done by its American rival. Dana said, " Thoughtful skill and refined taste are needed to produce a beautiful work," and the Stratford Publishing Company have done it.

WILSON, ERNEST H. THE LILIES OF EASTERN ASIA. A Monograph. pp. xiv., 110, tt. 17. Dulau & Co., London, 1925; 25/-. Here the results of three journeys into Eastern Asia, the headquarters of *Lilium*, are detailed. It fitly summarises the knowledge which has accumulated since the publication of Elwes Monograph in 1880.

WRIGHT, WALTER P. ALPINE FLOWERS AND ROCK GARDENS. Illustrated in colour with Notes on Alpine Plants at Home by William Graveson. pp. 292, with 44 coloured plates. Third edition. George Allen and Unwin, London, 1924; 15/-. This is a very attractive volume, with brilliant plates of flowers set amid their natural surroundings. *Gentiana acaulis* is given on the frontispiece, and there is a delightful representation of *Androsace helvetica* with a white glacier as the background. There is a lovely group of *Myosotis alpestris* with *Silene acaulis* and *Primula longifolia;* another of *Erica carnea* on a hill slope, with distant mountain-tops suffused with the alpine glow, the startling rosy-red of *Rhododendron ferrugineum* contrasting with black-green pine, and the graceful *Soldanella* with " snow and fire " as a background. These are things to delight the eye and to bring back memories of far distant excursions in the Alps and Dolomites. The text is useful and practical and the work is divided into " Characteristics and Habitat, Alpine Plants at Home, Cultural, Descriptive and Selective," the latter in three sections. The former deals with fit species for culture, the second includes Shrubs for the Rock Garden, Lessons from the Japanese, and Selections recommended to the Maker of the Rock Garden, including Bog Plants and Ferns. Our member, Mr Graveson, contributes a very readable article on British Alpine Plants in which there are two good photographs of the Devil's Kitchen and the Snowdon Cliffs, home of *Lloydia* and the Saxifrages. In his article he gives a sympathetic reference to George Don of Forfar, and a good description of the homes of the Scottish alpines, albeit *Saxifraga caespitosa* is limited to two widely separated Scottish localities. Excellent and practical advice " How to form Rockeries " is given as also how to choose the kinds of stones and soils. The book makes an ideal present to a garden-lover and its possessor will be able to find value and pleasure in its perusal. A word of criticism may be offered. More attention should be given to the use of capitals in specific names. These are often used where they are not needed, *e.g.*, *Scutellaria Alpina*, and they are not employed where they should be, as in *Adiantum Capillus-veneris*. *Scolopendrium* is more correctly *Phyllitis*.

OBITUARIES.

Ball, Henry, F.L.S., M.R.S. Born 1857; died May 1925. He was born in Southport and, with the exception of a few years in pursuit of his vocation, he spent the whole of his life there. After a brief period as an apprentice to his brother, Mr George Ball, pharmaceutical chemist, he set up business on his own. He devoted his life to public service—religious and social enterprise taking the first place among his many interests. Though he was the last man in the world to claim prominence, Mr Ball was the foremost in local circles. His knowledge of the local flora could hardly be surpassed. He had haunted the sandhills since a child and botany was almost an instinct to him. He was a great authority on the Yellow Bird's-Nest—on which some controversy had waged—and he was able to write of the plant from actual observation. He was concerned in an amusing story at a meeting where a foreign professor was elaborating on the flora of the district. The professor had spent weeks in photographing a certain place on the sandhills and elaborating a theory. His fundamental finding was that the trees on the sandhills were the remnants of an antedeluvian forest, and on that he propounded a wonderful scheme. Permission was given to Mr Ball to reply. He did so by saying "I saw those trees set!" He was untiring in his wish to interest the public of Southport in science, and exhibited wild flowers and plants gathered in the district in the Atkinson Free Library, renewing them almost daily. He had great experience in Radiography. When Röntgen discovered X-rays, Mr Ball took up the study immediately and was the first in the town to produce an actual photograph. He was made Honorary Radiographer to the Southport Infirmary. He paid 3000 visits to the Infirmary to apply X-rays to patients, without fee. He was admitted a fellow of the Linnean Society about 1915, and was a member of the Society of Radiographers. He was a prominent Methodist layman, and was a Methodist of the fourth generation. He was the best known local preacher in the district, and was elected President of the Wesleyan Methodist Local Preachers Mutual Aid Association. During the war Mr Ball's municipal work was carried on with the greatest enthusiasm. He was elected Mayor of Southport in 1915 and made great efforts in raising war relief funds. He had conferred upon him, in connection with the Russian Flag Day movement in England, the Russian Imperial Order in recognition of his services. Councillor Ball also received a medal from the Order of St John of Jerusalem in recognition of his work. His special knowledge well fitted him for the chairmanship of the Agricultural Committee which he held up to the time of his death. He was keenly interested in education and had been vice-chairman of the Education Committee. Mr Ball was always ready and willing to help in all good causes. His help to amateur botanists was unlimited. Though always busy, he never failed to give help in naming specimens of wild flowers, etc., and he is greatly missed by all. He died at Plymouth on Sunday, May 10, 1925, as he would have wished, working to the very last. Having preached there twice on the Sunday, he passed away suddenly after the evening service at the house of his host. He leaves a widow to mourn his loss. RUTH BRIGHT.

BELL, WILLIAM, F.R.H.S. Born 1862; died 1925. By the death of William Bell, Leicestershire botany is deprived of one of its most assiduous field workers. From early boyhood until within a short time of his death, our late member devoted himself in a very thorough way to the investigation of the local flora. He was for many years secretary of the Botanical Section of the Leicester Literary and Philosophical Society and when the new Flora was suggested no more worthy person could be found to edit the phanerogams. He had a very wide knowledge of plants and was ever ready to impart to others. His time was fully taken up with lectures in consequence. He made a number of interesting first records for Leicestershire and received the Royal Horticultural Society's Medal in 1894. He prepared the article on Botany for the British Association Guide in Leicester in 1907. In 1908 he acted as Distributor to the Botanical Society and Exchange Club.

BRANDEGEE, T. S. Born 1843; died April 7, 1925. He was Hon. Curator of the Herbarium of the University of California.

CLARKE, WILLIAM GEORGE, F.G.S. Born at Stokesley, Yorks, January 7, 1877; died June 13, 1925. Educated at Thetford Grammar School he began to take an interest in Natural History as is not unusual, in a predaceous way, by collecting birds' eggs. Early in life he obtained a copy of Sir John Evans' "Ancient Stone Implements." This he used to good advantage in the Brandon and Thetford neighbourhoods, both rich hunting-grounds. In 1894 he was elected a member of the Norfolk and Norwich Natural History Society and his first paper was on Neolithic Man in the Thetford district. Later on he became a reporter on the "Norwich Mercury," of which paper he eventually became sub-editor. He founded a Rambling Club, mainly for botanical research, but he was connected with many societies, and "ask Clarke" became a household word. He was elected a Fellow of the Geological Society, and in 1921 he published an important work "Norfolk and Suffolk." A third book on Breckland, a name which he coined, now in general use, had been completed a few months before his death but it has not been published. "He loved Nature in all her moods, and she in turn imparted to him her secrets." I found him very inspiring and helpful and the Society has lost a useful member. His funeral was very largely attended and expressed the respect and affection he had gained among the citizens of Norwich.

DARWIN, Sir FRANCIS, F.R.S. Born at Down, Kent, 1848; died at Cambridge, September 19, 1925; aged 77. Educated at Clapham Grammar School and Trinity College, Cambridge, and at Würsburg in Germany under Sachs, he collaborated with his distinguished father in the epoch making work on the Power of Movement in Plants. He acted as University Lecturer in Botany at Cambridge from 1884 until 1888 and Reader until 1904, and was Deputy for Prof. Babington until 1895. He published with E. H. Acton a "Practical Physiology of Plants." He also wrote a book on the "Elements of Botany." He was an ardent and original worker in plant physiology. We owe to Sir Francis one of the best biographies yet issued that of the "Life and Letters of Charles Darwin." He was Vice-President of the Royal Society 1907-8, and was knighted in 1913. At the Charles Darwin Celebration at Cambridge, he was a most kindly personage, and the wonderful testimony paid to a great scientist must have been one of the proudest moments of his lengthy and eminently useful career.

Dykes, William Rickatson. Born November 4, 1877; died, after a motor collision, December 1. 1925. He was educated at the City of London School and Wadham College, Oxford, taking honours in the Classical School. He then went to the Sorbonne and took his L. ès L. at the University of Paris. He was assistant master at Charterhouse from 1903-1919. While there he began the cultivation of Iris and its study. He visited Oxford for the purpose of examining the old specimens in the Morisonian and other Herbaria. He had a wide correspondence and took great pains to arrive at a correct conclusion, while his vacations were largely spent in visiting the classic habitats of many species. In 1912 he published a Monograph of the genus, which is reviewed in *Rep. B.E.C.* 188, 1912. The illustrations are good and it was a valued contribution to our knowledge of the genus. The section *spuria* seemed to be treated less happily. In 1919 he was selected to take the secretaryship of the Royal Horticultural Society succeeding the Rev. W. W. Wilkes of Shirley Poppy renown. He threw great energy into his work and the Society gained lustre under his regime. Its membership roll is now 23,000. He was contemplating a Monograph of *Tulipa*. In 1924 he issued a "Handbook of Garden Irises," full of practical advice. It is a cause of great regret that his useful career should have been so prematurely cut off. He was motoring near Woking when his car collided with a lorry. His ear was torn away and his right arm broken. After the necessary amputation he succumbed to shock, at the early age of 48. There was a portrait of him published in the Gard. Chron. on December 5. "The Times" will miss a valued contributor.

Earle, Mrs C. W. Born June 8, 1836; died at the Woodlands, Cobham, Surrey, February 27, 1925. Authoress of "Pot Pourri from a Surrey Garden": "More Pot Pourri from a Surrey Garden" in 1903; "A Third Pot Pourri" in 1906: "Gardening for the Ignorant" in 1912. A delightfully charming personality, Mrs Earle, by her writings, interested a large circle in Herbals and their contents. On one occasion at a house party at Kiddington Hall our host, Captain Gaskell, himself a great garden lover and the discoverer of *Muscari* near Ditchley, was making some remarks antagonistic to papistry but we got the subject changed by my turning to Mrs Earle and saying he must not expect to make converts to a no-popery cry in the presence of the authoress of Pot-Pourri. We had an expedition to a delightful wood, the home of *Ornithogalum*, but the rain came on. One of our guests was dressed in a state brocade, much more fitted for marble-halls. She was a Miss Throgmorton, but she bravely turned it up and walked us off our legs. The truth dawned upon me after dinner for I remembered she had been lady-in-waiting to the ill-fated Empress of Austria who herself was an extraordinary pedestrian. Mrs Earle was practically a vegetarian, at least when I knew her and would have bread and cheese despite all temptation.

GAMBLE, JAMES SYKES, C.I.E., F.R.S. Born July 2, 1847; died East Luss, September 16, 1925. He was the second son of Dr Harpur Gamble, R.N., and was educated at New Cross, Royal Naval School and at Magdalen College, Oxford, as a Demy, where he took first-class in mathematics. He entered the Forest Service and studied Forestry practically at Nancy (where Nanquette was director) in the Ecole National des Eaux et Forêts until the Franco-Prussian war, when he pursued his studies at St Andrews under Dr Cleghorn. He collaborated with Sir George King in the preparation of the Flora of the Malaya Peninsula, many new species being described by him. After King's death he continued the gigantic task. He also had on hand the arduous work of the Flora of Madras of which six parts have appeared from Ranunculaceae to Plantaginaceae. These have already been reviewed in these pages. His issue of the Monograph on the Indian Bamboos was followed by his election to the Royal Society. Another magnificent piece of work was his most useful "Manual of Indian Timbers," 1881, which from time to time has been referred to in these pages, each edition being an improvement on its predecessor. A large part of the Asian plants in the Du Bois and Sherardian Herbaria at Oxford were kindly identified by him. In 1899, on his retirement from the Forest Service, he received the C.I.E. See Nature, ii., 684, 1925. He also received the Jury Medal and Diploma of the Paris Exposition of 1906. For this he organised the Indian forestry section. He was a most patient and untiring taxonomic worker as is fully exemplified in his Madras Flora. Owing to his kindness I was enabled to give some particulars of Lawson's work in India in our last Report. Oxford owes him a debt of gratitude for much timely assistance. An excellent appreciation of him is given in the Kew Bulletin 1925 with a good Bibliography.

GIBBS, Miss LILIAN SUZETTE, F.L.S. Died at Santa Cruz, Teneriffe, January 30, 1925. Miss Gibbs had two years' training at the Swanley Horticultural College and in 1901 became a student of the Royal College of Science, South Newington, under Prof. J. B. Farmer. She stayed on for some years as a research student gaining the Huxley Medal in Natural Science. Then, in pursuance of her aim, which was to investigate the high-mountain flora, she visited the Alps in 1905, in 1906 Southern Rhodesia, in 1907 the Mount Victoria range in Fiji, and in 1910 the peak of Mount Kinabalu, 13,000 feet, in British North Borneo, collecting many plants new to science. Then in 1913 she made an adventurous journey to the Arfak mountains in Dutch New Guinea where she studied the flora assiduously from the coast level to the main ridge, 7000 feet in altitude. The results appeared in "The Phytogeography and Flora of the Arfak Mountains." Many new plants were discovered. The Bellenden-Ker range in Queensland she ascended in the rainy season, results being given in Journ. Bot., 1917. The mountain summit plateau of Tasmania was also explored, the results being described in two papers in Journ. Ecol. in 1920. Later on she visited South America and at her death was working out the result of her expeditions. I had the pleasure of hearing her lecture on her New Guinea experiences which she did with considerable vim. I also got from her afterwards a vivid personal account of her experiences. By her will she left the Trustees of the British Museum all her collections of plants, books, and papers, now in the British Museum, and a scholarship for Cancer Research to the University of London of the annual value of £150, to be called, in memory of her mother, the Laura de Saliceto Studentship.

GODLEE, Sir RICKMAN JOHN. Died, suddenly, April 20, 1925. A nephew of Lord Lister, and his biographer. He was surgeon to the Household of Queen Victoria, Surgeon-in-ordinary to King Edward VII., and King George V., and President of the Royal College of Surgeons. He returned in 1920 to a beautifully situated home near Pangbourne. He left, after his wife's death, £10,000 for travelling scholarships for students of University College Hospital Medical School. His note on *Sonchus palustris* is in the *Report* 524, 1924.

HENSLOW, Rev. GEORGE. Born March 23, 1835; died at Bournemouth, December 30, 1925. He was the son of the Rev. John S. Henslow, rector of Hitcham, Suffolk, and Professor of Botany at Cambridge. He was educated at the Grammar School, Bury St Edmunds, became a scholar of Christ's College, Cambridge, and took a first-class in the Natural Science Tripos and second-class in both Mathematics and Divinity. His sister was married to Sir Joseph Hooker. Henslow became curate of Steyning, Sussex, and was later appointed Headmaster of Frampton Lucy Grammar School, Warwick, then of the Grammar School in Stone Street, London. In 1886 he was appointed Lecturer on Botany at St Bartholemew's Medical School and also held lectureships on botany at the Birkbeck Institute and Queen's College, London. For many years he was Hon. Professor of Botany to the Royal Horticultural Society. In 1888 he published "The Origin of Floral Structures," and in 1895 "The Origin of Plant Structures," but his views that the shape and arrangements of the parts of the flowers were directly the result of bee-visits over a long period were generally ignored. He also published several works such as "How to Study Wild Flowers," "Poisonous Plants," "The Plants of the Bible" as well as many on religious subjects. In his later years at Bournemouth after his retirement he took up Spiritualism.

HIERN, WILLIAM PHILIP. Born at Stafford, January 12, 1839; died at the Castle, Barnstaple, November 1, 1925. Hiern's father, Mr J. G. Hiern, lived at the Castle and his paternal grandmother was a member of the poet Gay's family. But mathematics rather than song was the bent of W. P. Hiern, whose early education was at Worcester and St John's College, Cambridge, which he entered in 1857, taking a high position (ninth) in the mathematical tripos in 1861. He was a fellow of his College from 1863 to 1868. In 1868 he was admitted *ad eundem* M.A. at Oxford, and in that year he married Martha Bamford, member of an old Yorkshire family. The married couple took up their residence at Richmond and there the proximity of Kew Gardens exerted their influence, and Mr

Hiern was drawn to our science in which he became proficient. One of his earliest contributions was a paper in Seemann's Journ. Bot. 1871, on the British Water Buttercups, entitled "On the Forms and Distribution over the world of the Batrachian Section of Ranunculus." He says 75 different specific names have been published, but after investigation he thought "that the most philosophical course to follow was to unite all the forms under one aggregate species." Even then he reduces the named "forms" to 35, about six of which were not British. They include *hederaceus* and *Lenormandi* and *Drouetii* as distinct from *trichophyllus*. He described *sphaerospermos* for the first time as British on the evidence of Dr Kirk's Warwickshire specimens. His mathematical bias is shown in this paper, and is illustrated by the leaf curvatures of the *hederaceus* and *heterophyllus* groups. He published a "Monograph of the Ebenaceae" in 1873, through the Cambridge Philosophical Society, of which I have his autographed copy; "Dicotyledons," 1896-1900, a "Catalogue of the African plants collected by the Portuguese botanist, Dr. Welwitsch (commemorating the genus *Welwitschia*) in 1853-61. This and other work on Serpa Pinto's collection gained him the Corresponding Membership of the Royal Academy of Lisbon, and an autograph letter from the King of Portugal. More than 50 botanical contributions were made by him. He was an early convert to the principle of priority and in his contributions to the Flora of Tropical Africa and elsewhere he had the courage of his opinions. He was a contributor to the Linnean Society's Journal, of which body he was a Fellow, and in 1903 he was elected F.R.S. In later years he threw himself whole-heartedly into the cause of education in Devonshire, became chairman of the Education Committee and Alderman of the County Council. Indeed he filled an enormous number of offices, for which his early training in the local firm of bankers at Barnstaple had given him fitness. He, however, did not neglect his Botany for he wrote the article on that subject for the Victoria County History for Devon in 1906, and also in the Court Guide and County Blue Book. He acted as Secretary to the Botanical Committee of the Devonshire Association and issued annual reports most of which have been noticed in these pages from 1909-1919. In an appreciative note by his friend, Mr Brokenshire, he is called the Linnaeus of Barnstaple. Here he conducted many botanical rambles—and these were not picnics—they were much more serious, and I have had the privilege of being with him on more than one occasion. He took life seriously, and perhaps some people thought him somewhat dogmatic and precise, but what else could a mathematician be. One always looked forward to his publishing his large store of accumulated material which would have made a Flora worthy of his glorious county. Here is a picture of him. " Punctual to the minute he arrives in tall hard hat, and Dartmoor boots, carrying a role of 6-inch ordnance maps and newspaper sheets tied round with thick cord. He was blessed with 17 pockets. He liked to get the serious work done before lunch—after which for a time two plants occupied his attention—tobacco and briar." He did his botanical work with low power glasses. His simple dissecting microscope formerly belonged to the great Indian botanist, Wallich. In his earlier days he had visited the great botanical gardens of Paris, Stockholm, Lisbon, Vienna, Petersburg and Moscow. The last time I met him was in Adelaide where, like myself, he was one of the guests of Australia at the British Association meeting. There Hiern was arrested as a spy. He made a short ramble from one of the ports and was detected by a lynx-eyed sentinel. He was, however, soon released, and he got back to his hotel safe and sound. One might add that he made an Index Abecedarius to the "Species Plantarum," and wrote a paper on *Alsine* and *Minuartia* to Journ. Bot. Almost my last note from him was on the discovery of true *Ranunculus tripartitus* in Devon, and I was able to tell him that I had seen his *Ranunculus sphaerospermos* growing in the Jordan. Until 1923 he had robust health, but he had a slight seizure in Exeter at a public meeting. The week before his death he attended a function at the Barnstaple Grammar School, so that he died in harness. In politics he was strong Liberal and a President of the Barnstaple Central Liberal Association. We shall miss a valued member and Devonshire one of its characteristic and courageous country men. Spencer Moore named the African Acanthaceous genus *Hiernia* in his honour.

LEVERHULME, VISCOUNT AND LORD OF THE WESTERN ISLES. William Hesketh Lever, Hon. LL.D. (Edin.), etc. Born at Bolton, 1851; died, from pneumonia, May 7, 1925. He married Elizabeth

Ellen Hulme—hence his title Leverhulme—a happy union, and there is one son who succeeds him. He was made a Baronet in 1911, a Baron in 1917, and in 1922 a Viscount. His career is one of the romances of industry. Born of humble parents, at the age of 16 he entered his father's grocery business, and at 26 started business for himself at Wigan. He began making Sunlight Soap at Warrington, and with his genius for advertising he succeeded so well that Port Sunlight was founded and a limited company formed. The manufacture of glycerine was added to the existing soap works. He made Port Sunlight a model town and added one conquest to another in his acquisition of the firms of Crosfield, Vinolia and Pears until he had the soap-trade in his hands. He was a very cheery soul and a lover of beautiful things, and had a real patriotic spirit as evidenced by his gifts to the nation of Stafford House as a repository for the London Museum and the establishment of a Lady Lever Art Gallery at Port Sunlight. He was an indefatigable worker. In his later years he lost his hearing, but he was as fresh in thought and vigorous as ever when I met him at a Health Congress in Brussels. In Belgium he had very wide interests and had won for himself the respect and the affection of the King and Queen. Something of importance arose. We had a Committee nearly on to midnight, but the next day he made his Presidential Address before King Albert and an excellent one it was, and evidently pleasing to his Majesty. He was one of our Life Members—an excellent insurance policy that I recommended to him. It was a great disappointment to me that I could never find time to visit him in the Lewes nor to see him at Port Sunlight with " a thousand clerks on his right and a thousand on his left hand." Indeed the last time I saw him was in 1924. I had just come back from Spain but slept in London. It came to my memory that the Academy Private View was about due, so I said to my young travelling companion that I would go down to Burlington House to enquire. He said " you cannot possibly go to the Academy dressed as you are." Well, I said, even if it is the day perhaps there will be some one as badly dressed. " That's impossible," was the unflattering reply. It was the Private View, and the first person whom I knew was Lord Leverhulme, and he ran me pretty close. I said "Come and look at my picture." He stared, and when he looked at it, said, "Oh, I thought you had painted it."

I said, " Did you think I wanted to sell it to you." However, as usual, we had our joke—for he loved one and had many choice stories. He was as keen as mustard, and his speeches always had some attic salt and a great amount of worldly wisdom. Despite temptation he kept to the simple faith of his forbears, and in the world's commerce he commanded that respect which his honesty and integrity have justly won for him in all the quarters of the globe—he could really take the motto of the old Apothecary Society "Opiferque per orbem dicor," for he had associated businesses in Germany, Belgium, Switzerland, Australia, Canada, America and Africa. His funeral was of a most impressive character, 7000 employees lining the road and the 400 wreaths included one from King Albert. One feels that the commercial world is the poorer for his loss however much richer it may be for his example.

MAIDEN, JOSEPH HENRY, I.S.O., C.M.G., F.R.S. Born St John's Wood, London, April 1859; died, at Sydney, November 8, 1925. He was educated at the City of London Middle Class School and was a student in London under Prof. Bentley. His health failing he was ordered to take a long sea voyage. He went out to Sydney and being glamoured by the wonderful harbour determined to make that colony his home. He first did work as an educational lecturer, and in 1881 he became Curator of the Sydney Technological Museum. Here, in collaboration with Baker and Smith, he began his researches on the Eucalypti which have borne so rich a harvest. To this work he devoted year after year of study and the Monograph grew in interest and value. Fortunately he lived long enough to see it practically completed and seven completed quarto volumes are before me as I write. They contain 225 plates. He was very pleased to be made an Hon. Member of our Society in 1920. I had long before made his acquaintance, and he was to have been my host at Sydney on the British Association visit, but the outbreak of war altered my arrangements. In reply to my apology came a wire from Sydney. " Deeply deplore not seeing you once again." Maiden was also the author of " Useful Native Plants of Australia." " Illustrated Flowering Plants and Ferns," "Manual of the Grasses of New South Wales," " Wattles and Wattle Bark," and a most useful and inexpensive "Forest Flora of New South Wales," occupying no fewer than eight quarto volumes. Few botanists more richly deserved the Linnean Gold Medal which was conferred on him in 1915. His tenure of the wonderful Botanical Garden at Sydney was highly successful. These gardens, with their extraordinary history, once a portion of the convict settlement, he made one of the loveliest gardens in the world, and there he formed one of the largest herbaria in the southern hemisphere. He was President of the Royal Society of New South Wales on two occasions. Only last year (p. 429) we offered him our hearty good wishes on his retirement. Alas his retirement from office, not his cessation from labour, was all too brief. There is a portrait and eulogium of him in the Gardeners' Chronicle 400, 1924. As the memoir in Pharm. Journ., written by one who knew him, says "It is given to few of us to carry out so faithfully, fully, and fruitfully so noble an idea and discipline of thought and deed as were exemplified in his character and career."

MASSART, Prof. JEAN. Born at Etterbeek, a suburb of Brussels, in 1865; died at Houx, August 1925. He was a Corresponding Member of the Paris Academy of Science, a Foreign Associate of the Royal Academy of the Lincei. Educated at Brussels University, under Errera, whence he took his doctorate in Science in 1895, his earlier researches were in general biologic science. On the death of Prof. Leo Errera he was appointed director of the Errera Institute, and much of his early work is published in the Memoirs of that Institute. He took up Ecology with zeal and, as he was an expert photographer, he was enabled to illustrate beautifully his work on the Vegetation of Belgium. In his able "Esquisse de la Geographie Botanique de la Belgique" (Rec. de l'Inst. Bot. Leo Errera vii., bis) 1910 there is much original and valuable work. The companion volume was illustrated with about 500 photographs. This more popular work "Pour la Protection de la Nature en Belgique," issued in 1912, was a powerful advocacy for conserving the natural beauty of his country—so soon to be devastated by war, and his photographs of the beauty spots were excellent. In the same year was issued his "La Cinquantième Herborisation Générale de la Société de Botanique de Belgique," treating specially of the littoral, the polders and dunes which are such a feature of that coast. I made his acquaintance—which developed into a true friendship on the occasion of the International Phytogeographical Excursion in Britain in 1911. He was of robust build, had a swarthy complexion, was instinct with kindliness, and without a touch of that superiority which some savants or would-be savants affect. He was "the photographer" of that very successful expedition, and many of his delightful views are in evidence before me. In his note on the excursion, he said what struck him most was (1) L'abondance et la beauté des grandes arbres, surtout des chênes qui vivent partout entre les champs et au bord des chemins. (2) La douceur extraordinaire du climat, permettant de cultiver en plein air (a) à Cambridge, *Eucalyptus Gunnii, Viburnum Tinus, Quercus Ilex*, (b) presque dans les Highlands, *Araucaria excelsa, Tropaeolum speciosum*, (c) en Irlande *Passiflora caerulea, Bambusa fastuosa, Musa Bajoo, Cordyline australis*, (d) en Cornouaille, des fougères arborescentes (*Dicksonia antarctica*). . . . . (14) Last not least, l'amiabilité et la grande compétence des botanistes anglais, qui nous ont permis de voir énormément de choses en un mois." Then, too soon, came the havoc of war. Honest Jean's outspoken denunciation of the iniquities perpetrated by the invaders led to his having to flee first to Holland, then to Antibes in France, whence I had much evidence of his activity with the "subterranean press" in Belgium and his zeal for the Red Cross. He was one of our very valued Honorary Members, and when I last saw him in Brussels in 1922, I sounded him on the question of resuming international discussion, but he was emphatically negative. I was to have gone over again to stay with him, but the opportunity did not arise. But the vivid personality of a kindly man and an able botanist remain. His memory will be cherished by many a student who passed under his hands and only last month the son of the distinguished botanist of Geneva, M. Chodat, was speaking to me in the warmest way of Massart's fatherly friendliness to his pupils.

MOREY, FRANK. Born at Newport, Isle of Wight, March 1858; died there December 29, 1925, after an operation, having been in his usual health until five days before the end. From boyhood he was a keen naturalist, and made collections of most of the groups of insects and kindred creatures. These were very extensive.

Botany attracted him later and in 1920 he formulated a scheme for a census of the plants of the Island, but the paucity of workers prevented much progress. Previously to this, in 1909, he published "A Guide to the Natural History of the Isle of Wight," a substantial volume of 560 pages, to which, besides himself, a score of specialists contributed. In 1919, with Mr James Groves, he founded the Isle of Wight Natural History Society, which has now a membership of 275, acting as honorary secretary and editor of its "Proceedings." A year ago he purchased Borthwood Copse, a beautiful wood of 55 acres, to save it from impending destruction, and bequeathed it to the National Trust of the Island Committee, of which he was a member, as he was also of many scientific societies, local and national. For a time (till the war prevented his attendance) he was on the Council of the Ray Society, and was to the last meteorological observer at Newport for the Meteorological Society. He spent time and money to secure a home for local geological collections, and to add to them. He was also President of the Newport Literary Society. As a citizen he was no less active. He was manager and trustee of the Newport Savings Bank for many years, a manager of the County Council Evening Classes, and a co-opted member of the Borough Educational Committee. He was fond of travel, visited the northern capitals of Europe, including Moscow, went to Egypt, Palestine, Greece, etc., and spent eighteen months in India and Ceylon, planned to go to China and Japan, but was compelled by illness to return home. As chairman of H. W. Morey & Sons, timber merchants, he occupied a leading position in the commercial as well as civic life of the Island. A man fastidiously just, of unobtrusive disposition, and ever-courteous manners, he was as popular as he was respected throughout the beautiful island he loved so well.

J. F. RAYNER.

SAUNDERS, JAMES. Born at Salisbury, March 30, 1839; died at Luton, Beds, April 17, 1925. Having spent some years in teaching he went early in life into the local industry of Luton straw-hat making. For most of his life he was interested in Botany and Ecology. He made some valuable discoveries in Bedfordshire, some of these appearing in Journ. Bot. 249, 1884. In the same Journal 271, 1889, he records the occurrence in Buckinghamshire of *Arnoseris* and

Dryopteris Thelypteris which still persist. But naturally it was Bedfordshire that benefitted most by his exertions, and in 1883 he sent a list of South Bedfordshire plants to the Journal of Botany following it up with other papers. His best find was that of *Tolypella intricata* from near Luton, etc. He also gathered *Nitella mucronata*. We had much correspondence a quarter of a century ago and he sent me, in 1907, a specimen of *Lycopodium clavatum* saying, " you will understand my pleasure in finding it as my first observation of this species in Beds during my twenty-five years' search. He contributed the Mycetozoa for the Victoria County History of Beds and Herts and in the botany of that work, my colleague and myself pay a tribute to his arduous work in Bedfordshire not only on the groups mentioned, but also on the Mosses. A bibliography is given in Miss Lister's appreciative review of him in Journ. Bot. 181, 1925.

SCHLICH, Sir W. Born at Hesse Darmstadt; died at Oxford, September 28, 1925; aged 85. He took his degree of Ph.D. at Giessen in 1866, and was appointed assistant keeper to the Burmese Forests by the Government of India when he was only 26 years of age. Then in 1870 he went to Sind and if he could not say " Peccavi," he did his work there so well that in 1872 he was made Conservator of Forests in Bengal. After seven successful years there he went to the Punjab, and there succeeded Sir Dietrich Brandis as Chief of the Indian Forestry Department. In 1885 he came to England to organise the School of Forestry of the Royal Engineering College, Cooper's Hill. Most of his Indian collections he gave to the Oxford Herbarium. He then came to Oxford to our Forestry School and became the Holder of the Chair which with untiring exertion he had helped to found. St John's College made him an Honorary Fellow. He was elected F.R.S. in 1908 and was made K.C.I.E. in 1909. His published works were of great importance, and include a " Manual of Forestry " in five volumes; " Afforestation in Great Britain and Ireland," and " Forestry in the United Kingdom." A friend and neighbour, he was always willing to help our Ashmolean Society, of which he was a member and a welcome lecturer. During the difficult period of the Great War he never lost the affection of those who knew him.

SCHWEINFURTH, DR GEORG AUGUST. Born of German parents at Riga, December 29, 1836; died at Berlin, September 20, 1925. See Nature ii., 680, 1925. A distinguished botanist and traveller in East Central Africa in the years 1863-6 he investigated the flora of Egypt from the Delta to Khartoum and from the Red Sea along the slopes of the Abyssinian highlands to the Blue Nile. In 1866 he explored the Sudan and his researches were so valuable that the Fouden Medal of the British Geographical Society was awarded him in 1874. It may be remembered that he discovered the Akka pygmies He also found an aberrant type of chimpanzee in *A. troglodytes Schweinfurthii.* His account of his journey "The Heart of Africa" is a most attractive and valuable book of travel. A new edition appeared in 1918 after he had taken up his residence in Berlin. His botanical and geological collections are now exhibited in the Berlin Museum. Braun named in 1866 a Scrophulariaceous genus akin to Antirrhinum, from Egypt, *Nubia*, in his honour, and Otto Kuntze suggested that *Schweinfurthafra* should replace the Tiliaceous genus *Glyphaea* of Hook. f.

SUTTON, ARTHUR W., V.M.H. Born at Reading in 1854; died April 15, 1925. He was a grandson of John Sutton, founder of the well-known firm. He received the Victoria Medal of Honour in Horticulture, and for some years was on the Council of the Royal Horticultural Society. He was senior partner in the Reading firm of Sutton & Sons. He cultivated and read papers on a Pea which he found in Palestine and crossed with the Garden Pea. Linn. Soc Journ., 1914. In the same Journal are papers on *Brassica* Crosses and wild forms and species of tuber-bearing Solanums

TONI, GIOVANNI BATTISTA DE. Died July 31, 1925. The author of the monumental work "Sylloge Algarum" in five volumes, published between the years 1889 and 1907. His other multifarious occupations included his investigations into the life of Aldrovandi, and his account of that botanist's friendship with his tutor Luca di Ghini of Faenza, Maranta, Clusius and contemporary botanists. He also continued Mattiolo's Illustrazione of Aldrovandi's Herbarium, of which a brief account was given in the Reports. De Toni's Bibliography has 400 titles, one of them, the Sylloge, of thousands of pages. For forty years he was editor of "La Nuova Notorisea."

Watson, W. Born at Garston 1858; died January 30, 1925; aged 67. (See paper on his work by Sir F. Moore, Gard. Chron. July 15, 1922.) Kew Bulletin, i., 96, 1925. He joined the Kew establishment in 1879, and on the retirement of Mr George Nicholson, he was appointed Curator, an office which he held till 1922. He was author of "Orchids: their Culture and Management:" "Cactus Culture for Amateurs;" "Climbing Plants," and "Rhododendrons and Azaleas." He was elected A.L.S. in 1904, and received the V.M.H. of the Royal Horticultural Society and the Veitch Memorial Medal in 1891. Sir Joseph Hooker dedicated Vol. 130 of the Botanical Magazine to him in commendatory words.

NEW COUNTY AND OTHER RECORDS.

Abbreviations.—*Rep. B.E.C.* = *Report of the Botanical Society and Exchange Club: Wats. B.E.C.* = *Report of Watson Botanical Exchange Club; Journ. Bot.* = *Journal of Botany; Nat.* = *Naturalist;* † = Adventive; * = New County Record (in the case of adventive plants this is only rarely added); ! placed after a plant signifies that the compiler has seen a specimen; ! placed after a locality that the compiler has seen it there; × placed between two scientific names means that the plant is a hybrid; 52, &c., numbers following a county, refer to the Watsonian vice-county in *Topographical Botany;* [ ] enclosing a record mean that confirmatory evidence is needed.

We are under great indebtedness to Dr A. Thellung for his most kindly help in determining so many of the adventive species and also to the Director of the Royal Botanic Gardens, Kew, to Mr J. Fraser, Mr W. O. Howarth, Prof. C. H. Ostenfeld, Dr J. Murr, Dr E. Almquist, Mr A. Bennett, Mr C. E. Britton, Dr Dahlstedt, M Paul de Riencourt, Mr C. E. Salmon, Mr C. V. Marquand, Mr W. O. Howarth, Rev. H. J. Riddelsdell, and others who have rendered critical assistance.

1. Thalictrum minus L., var. flexuosum (Bernh.). Ardtalnaig, M. Perth, three different gatherings, 1924 D. Haggart.

24. RANUNCULUS FLAMMULA L., var. PSEUDO-REPTANS Syme (=*tenuifolius* Wallr.). Kenfig, Glamorgan, Miss E. VACHELL. Flore pleno, Cuckfield, Sussex, H. BAINES.

28. R. SARDOUS Cr., flore pleno. †W. Linton, Peebles, BALFOUR; Bel Royal, Jersey, Miss M. COBBE.

36. R. FLUITANS Lam. A small form approaching *Bachii*, near Trescott, Staffs, DRUCE.

38. R. TRICHOPHYLLUS Chaix, var. GODRONII (Gren.). Byfleet, Surrey, 1895, C. B. CLARKE.

*39. R. DROUETII F. Sch. Wood Walton, Hunts, July 1924, DRUCE.

39 (2). R. SPHAEROSPERMOS R. & B. River Mimram, Digswell, Herts, LITTLE. Mr T. B. Blow added it to the British flora from Herts. (River Marum, Welwyn, 1875.) Curiously enough, on the same day, in August 1917, I received from the Herbarium Boissier at Geneva the type specimen of *sphaerospermos*, and Blow's own specimen gathered at Welwyn.

41. R. PSEUDOFLUITANS Bak. & Fogg., var. MINOR Pears. Andover, Wilts, DRUCE.

*42. R. BAUDOTII Godr. Cheviot, HESLOP-HARRISON.

*45. R. LENORMANDI F. Sch. At 1800 feet, Garvald, Peebles, BALFOUR.

†51. HELLEBORUS VIRIDIS L. In rocky thicket at Pont Ynysewen, Carmarthen, 1925, Mrs C. W. BEGG.

52. H. FOETIDUS L. Caswell, Glamorgan, WEBB.

*54. AQUILEGIA VULGARIS L. Stibbington, Hunts, DRUCE.

†55. NIGELLA DAMASCENA L. In a field near St Saviour's Church, Jersey, L. ARSENE.

55 (2). N. HISPANICA L. Airdrie, Lanark, GRIERSON.

72. BERBERIS VULGARIS L. Quite wild, Cheriton, Glamorgan. C. MARKS; *near Presteigne, Radnor, Mrs DEBENHAM.

*77. CASTALEA ALBA Wood. Traquair, Peebles, BALFOUR. ? native.

†79. PAPAVER SOMNIFERUM L. Among the sand-dunes at Melvich, W. Sutherland, July 1925, DRUCE. Var. HORTENSE. In a potato field, Fort Augustus, Easterness, WEBB.

80. P. RHOEAS L., var. CAUDATIFOLIUM Fedde. In plenty, amid many thousands of *P. Rhoeas*, in various forms near Bury St Edmunds, Suffolk. Gathered with Miss TROWER. Amongst these were var. *Pryorii* Druce and var. *Hoffmannianum* Fedde which has a large, intensely black blotch at base of petal, the blotch being fimbriatedly margined with white. *Caudatifolium* also occurred at Wansford, Hunts; Oundle, Northants, and Thetford, Norfolk, DRUCE.

*83. P. ARGEMONE L. Peebles, BALFOUR.

†90. GLAUCIUM CORNICULATUM Curt. Millbrook, Hants, Miss M. COBBE.

†93. ESCHSCHOLZIA DOUGLASII Walp. Persisting in Jersey, L. ARSENE.

†97. CAPNORCHIS FORMOSA (Walp.) O.K. Slate quarries Luss, Dumbarton, Grierson.

*104. FUMARIA CAPREOLATA L. Peebles, BALFOUR.

107. F. BORAEI Jord., var. GRACILIS Pugl. Barry Dock, Glamorgan, R. L. SMITH.

109. F. BASTARDI Jord. Tenby, Pembroke; Ullapool, W. Ross, DRUCE.

114. F. PARVIFLORA Lam., var. ACUMINATA Clav. Winton, Hants, DRUCE.

125. RADICULA AMPHIBIA Druce. Bluntisham, Hunts, July 1925, DRUCE.

†128. BARBAREA VERNA Asch. Mayals, Glamorgan, WEBB.

*130. B. ARCUATA Reichb. Nanpean, Cornwall, THURSTON; Venlaw, Peebles, BALFOUR.

†132. ARABIS TURRITA L. Christchurch, Hants, Miss ROOKE, ex RAYNER.

*143. CARDAMINE AMARA L. Glen, Peebles, BALFOUR. Not seen there by me, EDITOR.

144. C. IMPATIENS L. Found on a pollard willow near Powick Bridge about two miles from Worcester, 1922, as a seedling. Cult. 1925, Mrs C. U. STUART.

162. DRABA MURALIS L. Still at Coleford, W. Gloster, J. H. HAINES; *on a wall just outside Berkhampstead, Herts, Mrs BROWN; Bishop's Tawton, N. Devon, *Trans. Devon Ass.*

170. COCHLEARIA GROENLANDICA L. In great quantity and abundantly flowering in the wet shingle near Poolewe, W. Ross, July 1925, DRUCE.

†184. SISYMBRIUM ALTISSIMUM L. Fletton, Hunts; Wansford, Northants, DRUCE, with †185. S. ORIENTALE L.

†198. ERYSIMUM REPANDUM L. Romsey, RAYNER; Christchurch, S. Hants, Miss ROOKE.

204. SUBULARIA AQUATICA L. Llyn Bodlin, near Barmouth, Merioneth, N. WOODHEAD in *Journ. Bot.* 339. 1925.

†217. BRASSICA ALBA Boiss. Cornfields, Peebles, BALFOUR.

†218. B. JUNCEA Coss. Bude, Cornwall, THURSTON; Bitterne, S. Hants, RAYNER.

†223. B. GALLICA (Willd.) Druce. Christchurch, S. Hants, Miss ROOKE, ex RAYNER.

227. DIPLOTAXIS MURALIS DC. Newport, Salop, DRUCE; †*on rubbish, Wick Park, Caithness, WEBB.

†228. ERUCA ERUCA (L.) (E. SATIVA Cr.), Bitterne, S. Hants, RAYNER.

†231. CARRICHTERA ANNUA (L.) Prantl. West Dock, Hull. E. Yorks, WATERFALL (as *Eruca*), ex G. C. BROWN.

(All the Bursas named by Dr E. Almquist.)

232. BURSA ANGLICA (At.). Marston, Oxon; Basildon, Berks, DRUCE.

232. B. BRITTONII (At.). Hunsbury Hill, Northants, DRUCE; Bitterne, S. Hants, RAYNER.

232. B. CONCAVA (At.). Elton, Godmanchester, Hunts; Oundle, Northants, DRUCE; Bitterne, S. Hants, RAYNER; Lichfield, Staffs; Birmingham, Warwick; [Damascus, Syria], DRUCE.

232. B. DRUCEANA (At.). Abbey Wood, W. Kent, ST JOHN MARRIOTT; Birmingham, Warwick; Wood Walton, Hunts, DRUCE.

232. B. GALLICA (At.). Bostall Heath, W. Kent; The Terrace, Folkestone, E. Kent, ST JOHN MARRIOTT; Swathling, S. Hants, RAYNER; Cardiff, Glamorgan; [Kongsvold, Norway], DRUCE.

232. B. GERMANICA (At.). Belvedere, W. Kent, ST JOHN MARRIOTT; Wansford, Northants: Shotover, Oxon; Cardiff, Glamorgan, DRUCE.

232. B. LAEVIGATA (At.). Leith, Midlothian; Bucklebury, Berks, DRUCE.

232. B. PATAGONICA (At.). Joydens Wood, W. Kent, ST JOHN MARRIOTT; Peterborough, Northants; Bridge of Allan, Stirling: [Gethsemene, Palestine; Damascus, Syria], DRUCE.

232. B. TREVIRORUM (At.). Woolwich Common, Bostall Heath, Abbey Wood, W. Kent, ST J. MARRIOTT; Leith, Midlothian, DRUCE.

232. B. TURONIENSIS (At.). Middleton, Durham; Wood Walton, Hunts; Oundle, Northants; Leith, Midlothian: Gairloch, W.

Ross: [Hedoloma, Sweden], DRUCE. Probably this at Belvedere, W. Kent, ST J. MARRIOTT.

[232. B. RUBELLA (At.). Damascus, Syria, and its hybrid at Tiberius, Mosque of the Dome, Jerusalem, DRUCE.]

†233. CORONOPUS DIDYMUS Sm. St Michael's on Wyre, W. Lancs, WHELDON & WILSON.

†235. LEPIDIUM GRAMINIFOLIUM L. Avonmouth, C. & N. SANDWITH.

†239. L. PERFOLIATUM L. Leicester, BEMROSE.

†240. L. DENSIFLORUM Schrad. Hackney Marshes, Middlesex, 1921 [Ref. No. 2002], COOPER, ex BROWN; Port Meadow, Oxon, 1924, DRUCE & PARRY; Bitterne, S. Hants, Miss COBBE; Godmanchester, Hunts, DRUCE; Burnage, Lancs, H. BRITTEN; Par, Cornwall, TRESSIDER.

†240. L. NEGLECTUM Thell. Fowey, Cornwall, TRESSIDER.

246. L. SMITHII Hook. f. Glenfield, Leicester, BEMROSE. This is, I think, the var. *dubium* like the Northants plant, DRUCE.

†258. VOGELIA PANICULATA Horn. Oundle, Northants, July 1925, DRUCE; Fowey, Cornwall, TRESSIDER.

†260. MYAGRUM PERFOLIATUM L. Waste ground at railway, Peterborough, Northants, DRUCE: Wormwood Little Scrubs, REYNOLDS.

†263. BUNIAS ORIENTALIS L. Byfleet, Surrey, DRUCE; Hitchin, Baldock, Ashwell, etc., Herts, LITTLE.

264. CRAMBE MARITIMA L. St. Brelade's, Jersey; Bordeaux, Guernsey, 1925, Miss M. COBBE.

†268. RAPISTRUM RUGOSUM All., var. GLABRUM (Host). Newport, Isle of Wight, LONG; Bitterne, S. Hants, RAYNER. Det. THELLUNG.

†269. R. LINNAEANUM B. & R., var. HIRSUTUM Cariot. With above, LONG.

284. Reseda lutea L. Fletton, Hunts, July 1925, Druce.

(The Violets have been named by Mrs Gregory.)

291. Viola stagnina Kit. In 1925 I visited Wood Walton on three occasions in May and July. This species was in good condition and flowered freely. It existed also as the shade form, *umbrosa* Greg., and as the hybrid with *canina* (*V. stricta* auct., non Hornem.) and a triple hybrid *canina* × *montana* × *stagnina* = *V. Fryeri* mihi, Druce.

292. V. montana L. It was pleasing to see this rare plant again in good condition and, as Mrs Gregory says, exactly the same as the original gathering made by her at Wood Walton. See *British Violets* 100-102, 1912. Other plants occurred which were crossed with *canina* = *V. Gregoriae* mihi, Druce.

293. V. sylvestris, var. punctata Druce. Silverdale, W. Lancs, Cryer.

294. V. Riviniana × rupestris. Penrhos, Anglesey, May 1925, Druce.

298. V. odorata L., var. sulfurea Cariot. Knightswick, Worcester, C. Rea; †~~S~~Venlaw, Peebles, doubtless planted, Balfour.

295. V. rupestris Schmidt, var. glabrescens Neum. Budleigh Salterton cliffs, S. Devon, 1925, Major Orme; Widdy Bank, Durham, June 1925; Cnochan, W. Ross, Druce. × *canina*. Cnochan Rocks, W. Sutherland and W. Ross, July 1925, Druce.

296. V. canina L. × lactea = V. Watsoni Druce. Penrhos, Anglesey, with Lady K. Stanley and Mrs Guy Baring, May 1925, Druce. Var. macrantha Gren. & Godr. Culbin Sands, Elgin, July 1925. Plants from dry and sun scorched rocks by the Lune (v.-c. s 65-69) resemble plants named *rupestris* by Becker. They await further study, Trapnell. See *Brit. Violets* 97, 1912.

297. V. lactea × Riviniana. Merrow Down, Guildford, 1925, F. Clarke.

*304. V. LEJEUNII Jord. Carnforth, W. Lancs, WHELDON & WILSON.

*304. V. OBTUSIFOLIA Jord. Lytham, W. Lancs, WHELDON.

304. V. SEGETALIS Jord. Strath Carron, W. Ross, DRUCE.

*304. V. LEPIDA Jord. Ullapool, W. Ross, DRUCE.

309. POLYGALA VULGARIS L. Near Wrexham, Denbigh, JONES.

310. P. DUBIA Bellynck. Walney Isle, Lake Lancs, Miss COBBE.

318. DIANTHUS DELTOIDES L. Mayals, Glamorgan, HYDE.

†322. D. PLUMARIUS L. Barnwell Castle, Northants, Marchioness of HUNTLY.

†324. D. CARYOPHYLLUS L. On the walls of Elizabeth Castle, Jersey, July 1925. L. ARSENE.

*340. SILENE NOCTIFLORA L. As a casual, Peebles, BALFOUR.

†341. S. DICHOTOMA Ehrh. Ware, Herts, Miss TROWER & DRUCE.

†353. S. CATHOLICA Ait. Hortal. Weed in wood at High Abberley, Hale, Salop, Mrs MAW.

359. LYCHNIS ALBA × DIOICA. Rowney Warren, Beds, LITTLE: Abbey Wood, W. Kent, ST J. MARRIOTT.

*367. CERASTIUM ARVENSE L. Dolphinton, Peebles, BALFOUR.

†368. C. ALPINUM L. Sgurr nan Banachdich, Skye, 2600 ft., in some plenty on very steep rocks, MARQUAND.

371. C. VISCOSUM L. A very viscous form [R. n. 2317] on the foreshore at Beacon Hill, St Osyth, N. Essex, May 17, 1925, BROWN.

374. C. TETRANDRUM Curt., var. CAESPITOSUM Druce. Gairloch, W. Ross, July 1925; Tenby, Pembroke; Aberfraw, Anglesey. This has much of the facies of *semidecandrum* in its narrow capsule and strict condensed habit. A diffuse plant also occurred at Gairloch,

W. Ross, DRUCE, and a very glandular, darker green foliaged plant [2316] from Beacon Hill, St Osyth, Essex, BROWN.

377. STELLARIA AQUATICA Scop. Bank of the Gipping near Claydon, Suffolk, A. LASCELLES.

*378. S. NEMORUM L. Glen, Peebles, BALFOUR. Not seen there by Editor.

*380. S. NEGLECTA Weihe. Almost certainly this but the seeds are rather small, Ullapool, West Ross, DRUCE.

383. S. GRAMINEA L. With very short petals, Whinlatter Pass, Cumberland, J. HAINES.

†387. ARENARIA BALEARICA L. Village wall, Warmington, Northants, July 1925, DRUCE.

396. A. VERNA L. Away from lead-mines, " Boat Meadow " by Tyne at Stocksfield, Northumberland, K. D. LITTLE.

399. SAGINA NODOSA Fenzl. Aqualate, Staffs, DRUCE; †Medwyn, Peebles, BALFOUR.

401. S. SUBULATA Presl. Summit of pass, 1488 ft., Dalnaspidal, Perth, DRUCE.

408. S. PROCUMBENS L., var. DAVIESII Druce. Golf course, Littlestone-on-Sea, E. Kent, June 1925, ST JOHN MARRIOTT. This interesting little plant, which has many conspicuous petals, is of rare occurrence in Britain. It was first found near Beaumaris in Anglesey in 1817 by the Rev. H. Davies and is figured in Baxter's Phaen. Bot. iii., 199, 1837. It occurred in 1850 near Rugely in Staffordshire. See *Rep. B.E.C.* 280, 1918, DRUCE.

410. SPERGULA SATIVA Boenn. Culbin Sands, Elgin, wind-blown from cultivated ground a mile away, July 1925, DRUCE.

411. SPERGULARIA RUPESTRIS Leb. Bolton-le-Sands, W. Lancs, ELLIS.

415. S. RUBRA Presl. At the top of the Dalnaspidal Pass, 1488

feet, Perthshire. In Fl. Perth. 1000 feet is given as the highest altitude, DRUCE.

†417. PORTULACA OLERACEA L. Naturalised at Tresco, Scilly Isles.

†418. CLAYTONIA SIBIRICA L. Peebles, BALFOUR; Eddleston, banks of the Girvan, Ayrshire, 1925, C. W. JAMES; Dartmoor, Devon, Miss SMITH; Armadale, Skye.

421. MONTIA LAMPROSPERMA Cham. Dalnaspidal, Perth; Strathpeffer, E. Ross, Gairloch, etc., W. Ross, DRUCE.

421. M. VERNA L. Lands End, Cornwall, E. B. WILKINSON. Var. INTERMEDIA (Beeby) Druce. Abundant at Penrhos, Anglesey, May 1925, DRUCE.

*435. HYPERICUM DESETANGII Lam. Banks of Lune near Coton, W. Lancs, WHELDON.

*437. H. HUMIFUSUM L. Glen Docharty, W. Ross, July 1925, DRUCE & R. H. WILLIAMSON.

444. LAVATERA ARBOREA L. Near Prestatyn, Flint, Miss B. ALLEN.

451. MALVA MOSCHATA L. Abundant at Upton Wood, Hunts, DRUCE; *Eddleston, Peebles, BALFOUR.

452 and 453. M. SYLVESTRIS L. and M. ROTUNDIFOLIA L. *Peebles, BALFOUR; Mellte Valley, Brecon, WEBB.

†452 (2). M. NICAEENSIS All. Port Meadow, Oxford, GAMBIER-PARRY; Fowey, Cornwall, TRESSIDER. Det. THELLUNG.

†454. M. PUSILLA With. *Rep. B.E.C.* 1924, p. 563, line 20. The statement about Bab. *Man.* appears incorrect. Bab. (Ed. ix.) says of *M. pusilla* "Carpels meeting each other with a toothed edge," and under *M. borealis* (ed. iv.) the same appears. But Coste, *Fl. de France*, says of *M. parviflora* "Carpelles glabres ou pubescentes, fortement ridés à bords ailés et dentés." Near Hitchin, Herts, LITTLE; Bowling, Dumbarton, GRIERSON.

†454. M. PUSILLA With. Near Hitchin, Herts, LITTLE; Bowling, Dumbarton, GRIERSON.

†456. M. PARVIFLORA L., var. MICROCARPA Loscos. Fowey, Cornwall, TRESSIDER; Colchester, 1924, DRUCE. Det. THELLUNG.

†459 (5). ABUTILON THEOPHRASTI Med. Basingstoke allotment, N. Hants, G. WILLIS, ex. RAYNER. Det. N. SANDWITH.

†461. HIBISCUS TRIONUM L. A form with dark purple flowers, on waste ground, Victoria Road, Colchester, October 1925, BROWN: Fowey, Cornwall, TRESSIDER.

*465. TILIA CORDATA Mill. (*T. ulmifolia* Scop.) Near Boot Eskdale, Cumberland, PICKARD.

466. RADIOLA LINOIDES Roth. Culbin Sands, Elgin, DRUCE.

†479. GERANIUM PHAEUM L. Field border near Duncroft Farm. Sydmonton, N. Hants, Capt. SAMUELSON.

†479 (2). G. ENDRESSI Gay. In a boggy common near Hassocks, Sussex, July 1925, Lady ALETHEA BUXTON; Leicester Abbey, BEMROSE.

481. G. PYRENAICUM Burm. f. Plentiful at Elton, Hunts, July 1925, DRUCE.

488 (2). G. PURPUREUM Vill. North side of St Vincent Rocks, W. Gloster, C. WALL, ex J. W. WHITE.

497. ERODIUM CICUTARIUM L'Hér., var. NEGLECTUM (B. & S.). Lihou Isle, Guernsey [31], BARTON; Pwllheli, Carnarvon; Harlech, Merioneth, DRUCE. Var. NEGLECTUM (B. & S.). Burnham, N. Somerset, W. WATSON, ex J. W. WHITE. Var. GLUTINOSUM (Dum.). Ainsdale, Lancs, 1912, WHELDON.

497 (2). E. PIMPINELLIFOLIUM Sibth. Brickhill, Bucks: Elgin, DRUCE.

504. OXALIS ACETOSELLA L., var. SUBPURPURASCENS DC. Loxhore, Devon, *Trans. Dev. Ass.*

†512. IMPATIENS PARVIFLORA DC. Booth, Cumberland, J. HAINES.

†513. I. GLANDULIFERA Royle. Trysull, Staffordshire, in great abundance and completely naturalised, Sir R. CURTIS & DRUCE; by the river above Manchester, 1925, Justice TALBOT.

515. ILEX AQUIFOLIUM L., var. LAURIFOLIUM Lej. Glen Urquhart, Easterness, WEBB.

†531. LABURNUM LABURNUM (L.). Clachnaharry, Easterness, with *L. alpinum* Presl, WEBB.

535. GENISTA TINCTORIA L. Ufton Wood, Hunts, DRUCE; *Peebles, BALFOUR.

547. TRIGONELLA ORNITHOPODIOIDES DC. Pwlldhu, Glamorgan, WEBB.

†550. T. POLYCERATA L. Millbrook, S. Hants, Miss A. B. COBBE.

†554. T. CAERULEA (L.). Abbey Wood, W. Kent, ST J. MARRIOTT.

562. MEDICAGO FALCATA L., var. TENUIFOLIOLATA Vuyck. Portishead, N. Somerset, Major ORME; Newhaven, Sussex, DRUCE.

†580. M. ARABICA Huds. Peebles, BALFOUR.

†584. M. CILIARIS Willd. St Philip's Marsh, W. Gloster, C. & N. SANDWITH.

†592. MELILOTUS SULCATA Desf. Ryde and Newport, Isle of Wight, LONG, ex RAYNER.

593. M. ALTISSIMA Thuill., var. UNGUICULATA Ser. Constant at Uphill, N. Somerset, N. SANDWITH; *Walkerburn, Peebles, BALFOUR.

602. TRIFOLIUM OCHROLEUCON Huds. Abundant near Upton Wood and near Winnington Wood, Hunts, DRUCE.

626. T. STRICTUM L. L'Ancresse Quarry, Guernsey, Miss M. COBBE. Doubtless a recent arrival.

628. T. repens L., var. phyllanthum Ser. Abbey Wood, W. Kent, St J. Marriott.

†631. T. parviflorum Ehrh. Airdrie, Lanark, Grierson.

*633. T. suffocatum L. (labelled *subterraneum*). Parkgate, Cheshire, July 1840, Hb. Dickinson, ex W. Travis.

†635. T. agrarium L. Bel Royal, Jersey, Miss A. B. Cobbe.

637. T. dubium Sibth. Ullapool, W. Ross, Druce.

†668 (2). Ornithopus roseus Desf. Wormwood Little Scrubbs, B. Reynolds.

*671. Hippocrepis comosa L. Langton Wold, S. E. Yorks, Miss Purchas in *Nat.* 213, 1925. New to Yorkshire.

680. Vicia Orobus DC. Boot, Cumberland, N. Adair & J. F. Pickard; Mellte Castle, Brecon, H. A. Hyde.

†680 (2). V. benghalense L. Eastville, Bristol, C. & N. Sandwith; Stansteadbury, Herts, Miss Trower.

705. V. tetrasperma Moench. Stibbington, Hunts, Druce; *Cheviot, Heslop-Harrison.

710. Lathyrus sylvestris L. Narrow-leaved form, Sleaford, Lincoln, Miss Landon; Knucklas, Radnor, Webb.

†718. L. hirsutus L. Cobham and Rochester, Kent, C. Stevens.

†723. L. Clymenum L. Near Don Bridge, Jersey, Druce.

†724. L. Ochrus L. Tadcaster, Yorks, Pickard; Newhaven, Sussex, Druce.

†734 (10). Glycine Soja (L.) S. & Z. Bristol, W. Gloster, N. Sandwith. Det. A. Thellung.

746. Spiraea Ulmaria L., var. denudata Boenn. Marsh near Combe Wear, S. Devon, a plant seven feet high, D'Urban.

(The Rubi have been named by the Rev. H. J. Riddelsdell.)

*759. RUBUS HOLERYTHROS Focke. Shotover, Oxon, RIDDELSDELL & DRUCE.

*764. R. INCURVATUS Bab., var. SUBCARPINIFOLIUS R. & R. Shotover, Oxon; Boars Hill, Berks, RIDDELSDELL.

*769. R. BAKERI F. A. Lees. Wigginton Heath, Oxon, RIDDELSDELL.

779. R. CALVATUS Blox. Bould Wood, Oxon, RIDDELSDELL.

*789. R. HESPERIUS (Rogers). Shotover, Oxon, RIDDELSDELL.

822. R. LEYANUS Rogers. Atherington, N. Devon, HIERN, in *Trans. Dev. Ass.*

*832. R. PODOPHYLLUS P. J. M. Shotover, Oxon, RIDDELSDELL. I was with Mr Riddelsdell when the Shotover and Boars Hill Rubi were gathered last July.

*852. R. ADORNATUS P. J. M. Bould Wood, Oxon, RIDDELSDELL.

†878. R. SPECTABILIS Pursh. Dolphinton, Peebles, BALFOUR.

†885. FRAGARIA MOSCHATA Duch. Salmonby, Lincs, Rev. W. WRIGHT MASON.

901. POTENTILLA REPTANS L., flore pleno. Offham, Lewes, Sussex, Miss COTTES.

*908. P. PALUSTRIS Scop. Traquair, Peebles, BALFOUR.

909. ALCHEMILLA ALPESTRIS Schmidt. Callander, W. Perth: Cnochan, W. Ross, DRUCE.

*913. AGRIMONIA EUPATORIA L. Peebles, BALFOUR.

(The Rosae have been named by Col. A. H. Wolley-Dod.)

925. ROSA SYSTYLA Bast. Upton, Hunts, DRUCE.

926. R. CANINA L., var. CURTICOLA Rouy. Boars Hill, Berks,

1925, DRUCE. Var. GLOBULARIA Dum. Shotover, Oxon, DRUCE. Var. NEMOPHILA Rouy. Saffron Walden, N. Essex, C. B. CLARKE. Var. INSIGNIS Rouy. Wimington, Upton Wood, Hunts. DRUCE. Var. SENTICOSA (Ach.). Pool Bottom, Oxon; Llandudno, Carnarvon, 1924, DRUCE.

932. R. DUMETORUM Thuill., var. PLATYPHYLLA, f. SPHAEROCARPA W.-Dod. Shotover, Oxon, DRUCE.

937. R. EGLANTERIA L. Culbin Sands, Elgin, DRUCE.

941. R. SCABRIUSCULA Wood. Hassocks, E. Sussex, DRUCE.

†944. R. POMIFERA Herrm. Keltny Burn, M. Perth, R. W. BUTCHER.

950. R. SPINOSISSIMA L. With very large blossoms on a hill side, Ledmore, W. Sutherland, July 1925, DRUCE.

946. ×R. HIBERNICA Templ. Dewbottom Scar Grass Wood, Yorks, PICKARD.

†954. PYRUS COMMUNIS L. Warren at Corbière, Guernsey, Miss M. COBBE.

966. CRATAEGUS MONOGYNA Jacq., var. PARVIFOLIA Druce. Eastleigh, S. Hants, RAYNER; Dartford Heath, W. Kent, ST J. MARRIOTT. Var. INCISIFOLIA Druce. Dartford Heath, W. Kent, ST J. MARRIOTT.

†969 (3). C. CRUS-CORVI L. Near Mells, Somerset, Mrs LINDSAY.

†970. C. PYRACANTHA Med. Milbrook, S. Hants, RAYNER.

972 (2). COTONEASTER MICROPHYLLA Wall. Naturalised on walls, St Brelade, Gorey, Grouville, etc., Jersey, L. ARSENE.

†972 (3). C. SIMONSII Baker. Chalk cliffs, Folkestone, F. W. PLACE; Hogs Back, Surrey, LITTLE.

†973. AMELANCHIER CANADENSE Med. Aldridgehill enclosure, New Forest, RAYNER.

*981. SAXIFRAGA HYPNOIDES L. Pentlands, Peebles, BALFOUR.

*982. S. granulata L. Traquair, Peebles, Balfour. Doubtless planted.

988. S. stellaris L., var. fontana Druce. Widdy Bank, Durham, June 1925, Druce.

†989. S. umbrosa L. On escarpments of Craig-y-Llyn, Glamorgan, doubtless planted, Webb.

†1001. Ribes Uva-crispa L. Stibbington, Hunts, Druce.

†1002. R. nigrum L. Stobo, Peebles, Balfour.

†1003. R. rubrum L. Llanberis, Carnarvon, 1925, Druce. Var. petraeum (Sm.) (*pubescens* Hartw.). Height of Winder, Sedbergh, N.W. Yorks [165], Trapnell.

†1004. R. alpinum L. Ham Tor, Dovedale, Staffs, Pickard.

1004 (2). R. sanguineum L. Middleton, Durham, Druce; Christchurch, S. Hants, Rayner.

†1006 (2). Tillaea aquatica L. Still at Adel and on both sides of pond, W. A. Sledge.

†1007 (10). Tetragona expansa. Waste ground, Budleigh Salterton, S. Devon, 1924, 1925, Major Orme.

1010. Sedum purpureum Koch. Mellte Castle, Brecon, Webb.

1011. S. rupestre L. Llandovery, Carmarthen, Webb.

1018. S. dasyphyllum L. Would any member visiting Loch Coruisk, Skye, look out for a *Sedum* growing on a rock there? Mrs W. Arthur Smith brought specimens back which she identified as *dasyphyllum*. They reached me in too battered a condition to be certain, and I doubtfully refer them to *anglicum*.

†1023. S. stoloniferum Gmel. Tir Hester, Glamorgan, Webb.

1025. S. roseum Scop. Abundant at Craig-y-Llyn, Glamorgan, Webb.

*1030. HIPPURIS VULGARIS L. Peebles, BALFOUR.

1035. CALLITRICHE STAGNALIS Scop., var. SERPYLLIFOLIA Lönnr. Poolewe, W. Ross, DRUCE.

1036. C. OBTUSANGULA Le Gall. Wood, Plimpton, W. Lancs, WILSON.

*1038. C. POLYMORPHA Lönnr. Near Poolewe, W. Ross. Quite the typical plant of Zetland, July, 1925, DRUCE.

*1042. PEPLIS PORTULA L. North Esk reservoir, Peebles. BALFOUR.

†1044. LYTHRUM MEONANTHUM Link. Coatbridge, Lanark. GRIERSON.

1047. EPILOBIUM HIRSUTUM L. Douglas Burn, Peebles, BALFOUR. Var. VILLOSISSIMUM Koch. Houghton on the Hill, Leicestershire, BEMROSE.

*1048. E. PARVIFLORUM Schreb. Kerfield, Peebles. BALFOUR.

1049. E. TETRAGONUM L. Upton Wood, Hunts, DRUCE.

*1050. E. LAMYI Schultz. Hanslope, Bucks. DRUCE.

*1052. E. ROSEUM Schreb. Cheviot. HESLOP-HARRISON.

†1058. E. NUMMULARIFOLIUM Cunn. Hortal. Tubney Wood, Berks, Mrs SHAWER.

1067. OENOTHERA SINUATA L. St Brelade, Jersey. Miss A. B. COBBE; Christchurch, S. Hants, Mrs ROTHWELL.

†1071. FUCHSIA RICCARTONI Hort. Brodick. Arran. DALTON.

1073. CIRCAEA ALPINA L. Cnochan. W. Ross and W. Sutherland, July 1925, DRUCE.

*1078. HYDROCOTYLE VULGARIS L. Peebles. BALFOUR.

*1084. SANICULA EUROPAEA L. Traquair, Peebles. BALFOUR.

†1075 (10). CITRULLUS COLOCYNTHIS Schrad. Bitterne, S. Hants, RAYNER.

*1080. ERYNGIUM CAMPESTRE L. Known for upwards of fifty years on Charterhouse Farm near Colerne, Wilts, E. H. STEVENSON.

1087. SMYRNIUM OLUSATRUM L. Preesall, W. Lancs, WILSON.

†1099. APIUM LEPTOPHYLLUM F.V.M. Alien. Hammersmith and Putney, Surrey, 1907, B. REYNOLDS.

†1101. AMMI MAJUS L. Falconbridge, Kent, Mr JUSTICE TALBOT; Cardiff, DRUCE.

†1105 (2). CARUM AROMATICUM (L.) Druce (=*C. copticum* B. & H.). Coatbridge, Lanark, very common in 1925, GRIERSON.

†1109. PRIONITIS FALCARIA Dum. Lancresse Bay, Guernsey, Miss M. COBBE.

1126. CHAEROFOLIUM SYLVESTRE (L.) S. & T., var ANGUSTISECTUM (Druce) mihi. Middleton, Durham; Poolewe, W. Ross; Strathpeffer, E. Ross; Callander, W. Perth; Glen Farg, E. Perth; Bridge of Allan, Stirling; Corstorphine, Midlothian; Linlithgow, DRUCE. Var. LATISECTUM (Druce). Elton, Hunts; Wansford, Northants; Pippingham, Rutland; Lutterworth, Leicester; Lichfield, Staffs, DRUCE.

*1134. OENANTHE CROCATA L. Traquair, Peebles, BALFOUR.

1135. OE. PIMPINELLOIDES L. Churchdown, Gloster, GREENWOOD.

1144. LIGUSTICUM SCOTICUM L. Gairloch, W. Ross, DRUCE.

1147. ANGELICA SYLVESTRIS L., var. DECURRENS Fisch. Middlewich, E. Denyland, Essex, BROWN.

1172. HEDERA HELIX L., var. BOREALIS Druce. Black Down, Sussex; West Mill, Hitchin, Herts, LITTLE.

*1174. CORNUS SUECICA L. Dollar Law, Peebles, at 2000 feet, BALFOUR.

†1181. Viburnum Lantana L. Near Aviemore, Easterness; Achterneed, E. Ross, Webb.

†1189. Leycesteria formosa Wall. Self-sown at Northwood Park, Cowes, Isle of Wight; Chandler's Ford, S. Hants, Rayner.

1192. Galium boreale L., var. stenophyllum Druce in *Rep. B.E.C.*, 1917. Cnochan, W. Ross; Inchnadamph, W. Sutherland, Druce; Ballantrae, Ayrshire, 1902, Somerville in *Hb. Druce*.

1193. G. ochroleucum Wolf. St Brelade, Jersey, Miss Cobbe.

1195. G. hercynicum Weig., var. transiens (Rouy). Forest Moor, above Harrogate, York, Miss Todd.

*1196. G. pumilum Murr. Cnochan, W. Ross, July 1925, Druce.

1198. G. palustre L., var. lanceolatum Uechtr. Bluntisham, Hunts, Druce.

*1204. G. anglicum Huds. Border of Bedford Purlieus, Northants, J. S. Gilmour, a splendid New County Record.

†1211. Asperula ciliata Rochel. Side of the River Stort, near Roydon, Herts, September 1925, Miss Trower; Mullion, Cornwall, Thurston.

*1215. Valeriana officinalis L. Upton Wood, Hunts, Druce.

†1218. V. pyrenaica L. West Linton, Peebles, Balfour.

1243. Solidago Virgaurea L., var. Plukenetiana Druce, subvar. acutifolia Druce. Bruar, E. Perth, Druce.

1248. Bellis perennis L., var. discoidea. Bridlington, Yorks, Pickard.

†1255. Aster novi-belgii L. North Kessock, Easterness, Webb; Colchester [n. 2312-2320], approaching *versicolor*, G. C. Brown, teste Thellung.

1258. A. Trifolium L., var. glaber Bolzon. Beaulieu, J. Vaughan; Redbridge, S. Hants, 1852, Piquet; Lelant, Cornwall, *Hb. Druce.* Var. ARCTICUM Fries. Poolewe, W. Ross, July 1925. DRUCE.

†1264. ERIGERON MUCRONATUS DC., var. KARWINSKIANUS DC. Walls, Grouville, St. Peter's, St Ouen's, Jersey, L. ARSENE.

†1278. GNAPHALIUM UNDULATUM L. Grand Havre, Guernsey. Miss COBBE.

†1278 (2). HELICHRYSUM STOECHAS L. Barry, Glamorgan. SMITH, teste KEW.

†1279. INULA HELENIUM L. Lower Dyserth, near Elms River. Dolben. Flint, Miss B. ALLEN.

†1289. IVA XANTHIIFOLIA Nutt. Wet lane, Stapleton, W. Gloster. H. J. GIBBONS, ex J. W. WHITE.

†1291. AMBROSIA ARTEMISIFOLIA L. Poole Harbour, Dorset, L. B. HALL.

†1292. A. TRIFIDA L. Twyford Mill, Berks, Mrs WEDGWOOD; Stansteadbury, Herts, Miss A. TROWER.

1309. BIDENS CERNUA L. Near Alton, Staffs, PICKARD.

†1327. ACHILLEA TANACETIFOLIA L. Colwall, near Malvern, Worcester, F. M. DAY.

1329. A. MILLEFOLIUM L., var. CONSPICUA Druce. Colchester, N. Essex, DRUCE.

†1344 (3). ANTHEMIS WIEDEMANNIANA F. & M. Colchester [2025]. BROWN, teste THELLUNG.

†1358. CHRYSANTHEMUM BALSAMITA L. Barry, Glamorgan SMITH. A nearly ray-less form.

†1362. MATRICARIA SUAVEOLENS Buch. Noirmont, Jersey, Miss COBBE; Christchurch, Hants, GRAVESON; Newport, Salop, DRUCE

†1368. ARTEMISIA CAMPESTRIS L. Alien. Headley, S Hants. Miss DAVIDSON, ex RAYNER

†1369. A. DRACUNCULUS L., vel. aff. Christchurch, S. Hants. L. B. HALL, teste THELLUNG.

†1380. A. BIENNIS Willd. Christchurch, S. Hants, L. B HALL. Port Meadow, Oxford; Abingdon, Berks, GAMBIER-PARRY; Moulsford, Berks, Miss NEILD.

†1386. PETASITES ALBUS Gaertn. Waltham, Leicester, BEMROSE.

†1388. DORONICUM PARDALIANCHES L. Eddleston Water, Peebles, BALFOUR.

†1390. SENECIO SARRACENICUS L. Kingussie, Easterness. WHITE.

1393. S. AQUATICUS Hill, var. DISCOIDEUS Druce. Near Cannock, S. Stafford. Differs from type in the ligules being absent. Forma AURANTIACUS mihi. Ligules deep orange-coloured. Bodorgan, Anglesey, 1918; near Cannock, Stafford, 1925; Binsey. Oxon, DRUCE; Wrentham, Suffolk. HORWOOD.

1395. S. ERUCIFOLIUS L. Symonds Yat. Gloster. RILSTONE.

†1396. S. SQUALIDUS L. Spreading rapidly from Brymbo about Wrexham, Denbigh, JONES; plentiful, Abbey Wood, W. Kent. ST J. MARRIOTT; between Fareham and Bridgemary, Hants, RAYNER.

†1399. S. VISCOSUS L. Stokes Bay, Isle of Wight. LONG, ex RAYNER; South Kessock, etc., Easterness, WEBB.

†1402. S. CINERARIA DC. Hortal. St Clare Road, Colchester, October 1925, BROWN. × JACOBAEA. Wall top, Newport, Isle of Wight, LONG, ex RAYNER.

1404. S. SPATHULIFOLIUS DC. In several places about Holyhead. In May the flowers were scarcely open but Lady KATHLEEN STANLEY sent it in good blossom in June.

†1408 (12). S. CLIVORUM Maxim. Banks of the Rother at Sheet, S. Hants, 1925, F. R. BROWNING.

†1411. CALENDULA ARVENSIS L. Eastville, Bristol, C. & N. SANDWITH.

1418. Arctium Lappa L. (=*majus*). Hitchin, Herts; Shouldham Warren, Wretton Fen, W. Norfolk, Little.

1424. Carduus acanthoides L., var. litigiosus (G. & G.). Henley, Oxon, Mrs Wedgwood & N. Sandwith.

1434. Cirsium palustre Scop., var. ferox Druce. Dundonnell, W. Ross, Druce.

†1443. Mariana Mariana Hill. Fortrose, Easterness, Webb.

1445. Saussurea alpina DC. Esk House, Cumberland, J. Haines.

(The Centaureae have been named by Mr C. E. Britton.)

1451. Centaurea nemoralis Jord. (=*radiata*). Upham, S. Hants, Rayner; Weston in Trym, W. Gloster, Trapnell; Marcham, Berks; Wansford, Northants; Biddesden, Wilts, Druce; Knowle Green, W. Lancs, Wheldon.

1451. C. obscura Jord. Ullapool, W. Ross; Aqualate, Staffs, Druce; Wigston, Leicester, Bemrose; Abbeystead, W. Lancs, Wheldon & Wilson.

*1451. C. pratensis Thuill. Bucklebury, Berks, September 1925, Druce, teste Britton.

1456. C. Scabiosa L., probably f. heterophylla Hedl. Bettyhill, W. Sutherland, Druce.

†1462. C. Solstitialis L. Glenfield, Leicester, Bemrose.

†1474. C. diluta Bieb. Bristol, C. & N. Sandwith.

†1477. Carthamus tinctorius L. Bitterne, S. Hants, Miss Cobbe; Ryde, Newport, Isle of Wight, Long, ex Rayner; Malvern Wells, Worcester, C. Rea.

†1478. Scolymus hispanicus L. Kingsmill Beck, Easterness, Webb.

1493. Crepis paludosa Moench. Mellte Glen, Brecon, Webb

1497. C. CAPILLARIS Wallr., var. DENTATA (Bisch.) Druce. Corwen, Denbigh, DRUCE, teste THELLUNG. Var. ANGLICA Dr. & Th. Strathpeffer, E. Ross; Ullapool, etc., W. Ross; Bruar, E. Perth; Lawers, M. Perth; Ufton, Hunts, with f. *griseola* in all places. DRUCE. Det. THELLUNG. Var. DIFFUSA (DC.) DRUCE. Fordham, Cambridge, 1881, FRYER.

(Mr J. Cryer has kindly named the Hieracia.)

1505. HIERACIUM PILOSELLA L., var. CONCINNATUM F.J.H. Bruar, E. Perth; Grantown, E. Inverness, 1925, DRUCE. Var. NIGRESCENS Fr. Gairloch, W. Ross, DRUCE.

†1512. H. AURANTIACUM L. (not of Pugsley). Saxby, Cropstone, Leicester, BEMROSE: Margam, Glamorgan, WEBB.

1513. H. ANGLICUM Fr., var. ACUTIFOLIUM Backh. and var. CERINTHEFORME Backh. Cnochan, W. Ross, DRUCE.

1542 (2). H. PSEUDOZETLANDICUM Roffey. Bettyhill, W. Sutherland (locus classicus), July 1925, DRUCE.

1542 (3). H. SHOOLBREDI Zahn (not E.S.M.). Bettyhill, W. Sutherland, July 1925, DRUCE.

1546. H. ARGENTEUM Fr. Melvich, W. Sutherland; Cnochan, W. Ross, DRUCE.

1581. H. RIVALE F.J.H. (probably). Cnochan, W. Ross, DRUCE.

1583. H. CYMBIFOLIUM Purchas. Hawes Water, W. Lancs, CRYER.

*1584. H. LINTONI Ley. Gairloch, W. Ross, DRUCE.

1599. H. VULGATUM Fr., var. SEJUNCTUM W.R.L. Oykell Bridge, Melvich, W. Sutherland; Cnochan, Ullapool, W. Ross, DRUCE. Var. SUBRAVUSCULUM W.R.L. Melvich, W. Sutherland, DRUCE.

*1627. H. SPARSIFOLIUM Lindeb., var. LONGICILIATUM F.J.H. Cnochan, W. Ross, July 1925, DRUCE.

1636. H. MARITIMUM F.J.H. It was very pleasing to see this very local endemic Hawkweed this year at Melvich in W. Sutherland, but most of the plants were dried up by the hot month. DRUCE.

1641. HYPOCHAERIS GLABRA L., var. ROSTRATA C. & G. Thetford, Suffolk, June 1925, DRUCE.

1644. LEONTODON NUDICAULIS Banks, var. LEIOLENA. Petersfield, S. Hants, F. R. BROWNING.

(The Taraxaca have been named by Herr Dahlstedt.)

*1645. TARAXACUM NAEVOSUM Dahlst. This good species was noticed at Byfleet, Surrey: Yardley Gobion, Northants; Ullapool, W. Ross: Teesdale, Durham, DRUCE.

*1645. T. NAEVOSIFORME Dahlst. Base of Annacoona, Sligo, 1924, Mrs WEDGWOOD. New to Ireland. As a var., Llanberis, Carnarvon, DRUCE.

1645. T. TENEBRICANS Dahlst. Yarnton, Oxon. DRUCE.

1645. T. CYANOLEPIS Dahlst. Llanberis, Carnarvon, 1925, and as a modification, DRUCE.

1645. T. GELERTII Raunk. High Force, Durham; and as a var., Ben Bulben, Sligo, DRUCE.

1645. T. NORDSTEDTII Dahlst. Llanberis, Carnarvon [BB. 267], 1924; Ben Bulben, Sligo, DRUCE.

1645. T. POLYODON Dahlst., mod. f. Ollaberry, Zetland, 1923, DRUCE.

1645. T. CROCEUM Dahlst. Oxford, DRUCE.

1645. T. DILATATUM Lindb. f. Elton, Hunts, DRUCE.

1645. T. LONGISQUAMEUM Lindb. f. Ware, Herts, DRUCE.

1645. T. MUCRONATUM Lindb. f. Allied to this, Yardley Gobion, Northants, DRUCE.

1645. T. EXPALLIDIFORME Dahlst. Oxford, DRUCE.

1656. SONCHUS ARVENSIS Hill, var. LAEVIS (G. G. & W.). Avonmouth Dock, W. Gloster, C. & N. SANDWITH.

1658. S. OLERACEUS L., var. CILIATUS Lam. (=*lacerus*). Cardiff; [CC. 30] Barry, Glamorgan; St Aubin's, Jersey, DRUCE.

†1660. TRAGOPOGON PORRIFOLIUS L. Tenby, Pembroke: Fletton, S. Hunts, abundant, DRUCE.

1663 (2). SCORZONERA HUMILIS L. Still abundant in the old locality, N. SANDWITH.

1666. JASIONE MONTANA L., f. LAEVIS. Hengistbury, S. Hants, Miss TODD, teste PUGSLEY.

1665. LOBELIA URENS L. Heath in E. Sussex, E. J. BEDFORD, ex WILMOTT in *Journ. Bot.* 26, 1925. The Christchurch locality has been known to me for some time.

1667. CERVICINA HEDERACEA (L.) Druce. On both sides of a rill at Winster over the boundary line of N. Lancs, September 10, 1925, so that it is in both v.-c. 69 and v.-c. 69b, W. H. PEARSALL.

†1674. CAMPANULA RAPUNCULOIDES L. Naturalised in arable fields, Wood Walton, Hunts, DRUCE.

*1678. C. PATULA L. Near Bucklebury, Berks, October 1925, Major BATES VAN DE WEYER. An excellent record, since the previous note in *Fl. Berks* related to its occurrence among grass seed. Here, on a wood border and about old gravel pits, it seems certainly native. It was still in flower in October when I saw it by the finder's directions, DRUCE; † a single plant, casual, Swaythling, S. Hants, RAYNER.

*1684. VACCINIUM ULIGINOSUM L. Solitary plant, Talla Linn, Peebles, BALFOUR.

1691. ARCTOSTAPHYLOS ALPINA Spreng. N.W. of Ronas Hill, Zetland, ex Mr J. CAMPBELL: Scuir Marxie, E. Rosshire, WEBB.

1692. Andromeda Polifolia L. On the bog-mosses up to 1500 feet on the borders of W. Lancs and M. Yorks, Pickard.

1693. Calluna vulgaris Hull, var. speciosa Druce in *Rep. B.E.C.* 328, 1913. Chun Castle, Cornwall, 1925, Sir A. Evans.

†1691 (5). Gaultheria shallon Pursh. Rhinefield, Southampton Gorse, S. Hants, Rayner.

1695. Erica Tetralix L., var. fissa Druce. Hants and Dorset, L. B. Hall.

*1708. Pyrola media Sw. Kailzie, Peebles, Balfour.

1709. P. minor L. Abundant on the Culbin Sands, Elgin, Druce; Dummins Dale, Alton, Stafford, Pickard; *Dawyck, Peebles, Balfour.

1713. Limonium Limonium (DC.) Druce, var. vel forma pyramidale Druce. Scolt Head, E. Norfolk, H. K. Airy Shaw.

1717. L. binervosum C.E.S. Bay S.W. of Telegraph Tower, Alderney, 1923, Templeman; Elizabeth Castle, Jersey, L. Arsene.

1721. Statice planifolia Druce. Helvellyn, Westmoreland, 2800 feet, Pickard.

1722. S. plantaginea All., var. bractescens Druce. Millbrook, Jersey, Miss Cobbe.

†1734. Lysimachia punctata L. Brightstone, S. Hants, ex Rayner; Rommano, Peebles, Balfour.

1736. L. Nummularia L. Bluntisham, Hunts, Druce.

*1740. Trientalis europaea L. Manor Head, Peebles, Balfour.

1746. Samolus Valerandi L. In great plenty at Aqualate Stafford, Druce and Sir R. Curtis; Droitwich, Worcester, Hon. Mrs Chapman.

†1747. Syringa vulgaris L. In heaps, N. of Lairg, E. Sutherland, Webb.

†1750. VINCA MAJOR L. Alwalton, Hunts: Tenby, Pembroke, DRUCE.

1755. CENTAURIUM VULGARE Rafn. Culbin Sands, Elgin, DRUCE.

1757. C. PULCHELLUM Druce. Small sub-simple plants, Formby, S. Lancs, WYNNE EDWARDS; Crawley Sands, Gloucester, WEBB.

1758. C. CAPITATUM Druce. Kettleness, near Whitby, Yorks, FLINTOFF; Warton Crag, W. Lancs, WHELDON.

1763 (3). GENTIANA SEPTENTRIONALIS Druce. Bettyhill, Melvich, W. Sutherland, the prevailing form, DRUCE.

1765. G. BALTICA Murb. Bamb~~orough~~urgh, Northumberland, R. B. COOKE.

†1767. NYMPHOIDES NYMPHAEOIDES (L.) Druce. Clyne Ponds, Glamorgan, introduced, WEBB.

†1780. PHACELIA TANACETIFOLIA Benth. Abingdon, Berks, 1925, GAMBIER-PARRY.

†1781. HELIOTROPIUM EUROPAEUM L. Bitterne, S. Hants, Miss COBBE.

†1783. OMPHALODES OMPHALODES (L.). Fairy Hill, Gower, Glamorgan, WEBB.

1785. CYNOGLOSSUM MONTANUM L. Herm, Channel Isles, Mrs HICHENS. Specimen not seen by me.

†1789 (5). BENTHAMIA (AMSINKIA) MENZIESII (McBr.). Govan Haven, E. HENSLOW; Port Meadow, Oxon, GAMBIER-PARRY.

†1789 (6). B. PARVIFLORA (Keller) with above at Port Meadow.

1791. SYMPHYTUM TUBEROSUM L. East Row, Sandsend, near Whitby, Yorks, June 1925, FLINTOFF.

†1797. BORAGO ORIENTALIS L. Hagley, Worcester, Rev. E. REYNOLDS.

1813. MYOSOTIS PALUSTRIS Hill, var. COMMUTATA (R. & S.). Cothill, Wytham, Berks; Bladon, Oxon, teste WADE, see *Rep. B.E.C.* 511, 1918, DRUCE.

1815 (2). M. SICULA Guss. In some plenty on the watery bank of an old quarry between Portelet Bay and Noirmont, Jersey, August 2, 1925. It appears to be the same plant I collected at Pleise, Loire Inférieure, France, L. ARSENE. This is the same as the plant given me by F. Druce who was with Mr Wilmott when it was first found. Rouy refers all the mainland plants to his var. *confusa* of *multiflora*.

†1817. M. SYLVATICA Hoffm. Abundantly and completely naturalised at Elton Bank, Northants, May 1925. With it was var. LACTEA, DRUCE. *West Linton, Peebles, BALFOUR.

*1820. M. COLLINA Hoffm. Niedpath Castle, Peebles, BALFOUR.

1821. M. VERSICOLOR Sm., var. PALLIDA (Bréb.). Menmarsh, Oxon, DRUCE.

1824. LITHOSPERMUM ARVENSE. L. Luxuriant examples, Buckden, Hunts, DRUCE.

†1827. ECHIUM PLANTAGINEUM L. S. Devon, Miss TACKER; near Corves, Calver Cliff, Isle of Wight, UPWARD, ex RAYNER.

†1850 (3). SOLANUM MARITIMUM Meyen. Bitterne, S. Hants, Miss A. B. COBBE.

†1852. NICANDRA PHYSALOIDES Gaertn. Les Petits Vaux and Beaumont, Jersey, L. ARSENE.

†1853. LYCIUM CHINENSE Mill. North Kessock, Easterness. WEBB.

†1854. ATROPA BELLADONNA L. Friends Burial Ground near the Roman Wall, Colchester, BROWN: on the cliffs, Gairloch, W. Ross, DRUCE.

†1855. DATURA STRAMONIUM L. Laughton, N. Lincoln, Miss MEYNELL.

†1856. HYOSCYAMUS NIGER L. Glen, Peebles, BALFOUR.

†1860. VERBASCUM PHLOMOIDES L. Quarry ground, Tytherington, W. Gloster, 1925, Miss I. M. ROPER.

†1864. V. BLATTARIA L. Belgrave, Leicester, BEMROSE.

†1866. V. LYCHNITIS L. In a fowl-run, Sowerby, Yorks, F. M. DAY; railway bank, Tilehurst, Berks, DRUCE.

†1867. V. NIGRUM L. Near Prestatyn, Flint, perhaps a garden escape, Miss B. ALLEN; †Eddleston, Peebles, BALFOUR; native at *Stibbington, Hunts, DRUCE.

†1877. LINARIA PURPUREA Mill. By railway, Daviot, Easterness, WEBB.

†1878. L. REPENS Mill. Giggleswick Station, Yorks, PICKARD.

1884. L. SPURIA Mill (*peloria*). Upton, Hunts, 1925, with 1885. L. ELATINE Mill., the latter also at Shipton, DRUCE.

†1899. MIMULUS MOSCHATUS Dougl. Naturalised in Glen Lyon, M. Perth, 1925, Miss TODD.

†1904. ERINUS ALPINUS L. On a wall near Malvern, Worcester, September 1925, TOWNDROW; Dolphinton, Peebles, BALFOUR.

1906. VERONICA HYBRIDA L. Moughton Scar, M.W. Yorks, MATTINSON in *Nature*, March 1925.

1907. V. OFFICINALIS L., var. INTEGRA Druce (*V. officinalis* L., var. *hirsuta* Williams, non Hopk.). Culbin Sands, Elgin, July 1925, DRUCE.

1910. V. SCUTELLATA L. The glabrous plant. W. Ballyvaghan, Co. Clare, 1925, P. B. O'KELLY. Culbin Sands, Elgin, DRUCE.

†1923. V. TOURNEFORTII Gmel. Garden weed, Ullapool, W. Ross, DRUCE.

(The Euphrasiae have been named by Messrs D. Lumb and W. H. Pearsall.)

1932. Euphrasia borealis Wettst. Culbin Sands, Elgin; Bettyhill, W. Sutherland, Druce.

1933. E. brevipila B. & G. Poolewe, Gairloch, W. Ross; Corfe, Dorset, Druce. A sub-glandular form from Windy Gap, Co. Kerry, Trapnell, and from Dunnet, Caithness, Druce.

1934. E. nemorosa Pers. Poulsallough, Co. Clare, Trapnell.

1934 (2). E. campestris Jord. In great abundance and very robust on Chilham Down, Kent, Miss M. Cobbe.

1935. E. curta Fr. Bettyhill, W. Sutherland, Druce. Var. glabrescens Wettst. Cnochan, W. Ross, Druce.

1937. E. latifolia Pursh. Cnochan, W. Ross; islet, Bettyhill, W. Sutherland, Druce.

1938. E. foulaensis Towns. Islet, Bettyhill, W. Sutherland, Druce.

1939. E. micrantha Fr. (=*gracilis* Fr.). Gairloch, Poolewe, W. Ross; Boat of Garten, Easterness; Ben Hope, W. Sutherland, Druce.

1941. E. Rostkoviana Hayne. Poulsallough, Co. Clare, Trapnell; Upper Claughton, W. Lancs, Wilson, teste Pearsall.

1943. E. Kerneri Wettst. Near Ballycullinan Lough, Co. Clare, Trapnell, teste Pearsall.

1948. Bartsia Odontites Huds., var. pallida (Lange). Castlegar, Ahascragh, Co. Galway, Miss Talbot.

1958. Melampyrum cristatum L. In beautiful flower on the borders of Monks Wood, Hunts, July 1925, Druce.

1962. Orobanche Rapum-genistae Thuill. Llandrindod Wells, Miss Wilding.

1977. Utricularia intermedia Hayne, teste Dr Glück. Tubber Bog, Galway, P. B. O'Kelly.

(The Menthae have been named by Mr J. Fraser.)

1988. Mentha rotundifolia Huds. Strangford, Co. Down, 1925, Major Head.

†1989. M. alopecuroides Hull. Near Biddesden, but in N. Hants, October 1925, Hon. Mrs Guy Baring and Druce.

†1990. M. longifolia Huds. × aquatica. Applecross, W. Ross, Druce.

†1991. M. spicata L. Callander, W. Perth, July 1925, Druce.

1993. M. piperita L. Strangford, Co. Down, 1925, Major Head.

1996. M. verticillata L., var. subglabra (Baker). Aqualate, Stafford, 1925, Druce. Var. ovalifolia Briq. Bank of Arun, Houghton, W. Sussex, Rayner.

1997. M. gentilis L., var. variegata (Sole). Tyndrum, M. Perth, Rev. H. Harvey. This is probably synonymous with var. Hackenbruchii, Editor.

1999. M. rubra Sm., var. raripila Briq. Near Falconhurst, Kent, Mr Justice Talbot.

2000. M. arvensis L., var. praecox Sole. Ashopton, Derby; Welford, near Hereford, Purchas; Amberley, Sussex; Fence Wood, Berks; Perth, 1911, Druce; Arundel, W. Sussex, Rayner. Var. Nummularia (Schreb.). Fence Wood, Berks; Dalmally, Argyll, 1893; Dunning, Perth, Druce. Var. obtusifolia Briq. Odiham, N. Hants, Miss C. E. Palmer; Cheddar, N. Somerset, 1849; St Ouen's, Jersey, 1850, Piquet; Braunston Pool, Leicester (as *sativa* in *Rep. B.E.C.* 1919), Wade; Shandon, Dunbarton, C. Bailey; Yardley Gobion, Harleston, 1878, Northants; Otmoor, Oxford; Dalmally, Argyll; Freshwater, Isle of Wight, Druce. Var. Scribae Briq. Banbury, Oxford, Beesley. Var. agrestis Sole. Banbury, Oxford, Beesley; Kintbury, Berks, Druce. Var. densifoliolata

Briq. Dalmally, Argyll, 1893, Marshall; Odiham, N. Hants, Miss C. E. Palmer; Summertown; Port Meadow, Oxford, Druce; Ashopton, Derby, Purchas. Var. paritariifolia (Beck). Fort William, Inverness, 1903, Druce. Var. Allionii (Bor.). Godstow, Oxford, Druce. Var. austriaca (Jacq.). Lathfield, N. Derby (as *Allionii*), C. Bailey; Headley, N. Hants, J. Vaughan; Megavessey, Cornwall, Miss Todd: north of Southport, Lancs, 1894, Wheldon; Westwater, Fife, 1845, W. Gardiner; Woking, Virginia Water, Surrey; Moss Bridge, S. Lancs; Harefield, Middlesex; Naphill, Bucks, Druce; Tiddenham Chase, W. Gloster, Riddelsdell.

†2004. Origanum vulgare L. Rachan, Peebles, Balfour.

†2019 (2). Salvia Sclarea L. Hortal, on rubbish, abundant, Hamble Common, S. Hants, Rayner.

2023. S. pratensis L. In a field, no houses near, Erlestoke, Devizes, Wilts, October 2, 1925, Marsden Jones, ex R. G. Gwatkin.

2042. Scutellaria galericulata L., var. littoralis Druce. Arisaig, Westerness, Mrs Duncan. See *Rep. B.E.C.* 275, 1912; Strath Carron, W. Ross, Druce.

2046. Prunella laciniata L. In a little used grassy track between Sparshort and Farly Chamberlayne, S. Hants, July 1925, Rt. Hon. H. Baker.

†2049. Marrubium vulgare L. Holme, Hunts, Druce.

2057. Stachys palustris L., var. canescens Lange. Sennen Cliffs, Cornwall, 1925, E. B. Wilkinson.

2062. Galeopsis Tetrahit L., var. nigricans Bréb. Wotton, Surrey, H. W. Monckton.

†2082. Teucrium Chamaedrys L. In a grass-dive in a pine and larch wood near Halton, Bucks, Mrs Sworden; in pretty good quantity in thick old turf on a high down about three miles N.W. of Lewes, Sussex, looking very wild, July 1925, Mr Justice Talbot.

2083. Ajuga reptans L., ? var. alpina Koch. = pseudo-reptans Syme. Langdon Beck, Durham, Druce.

†2085. A. GENEVENSIS L. Good examples have been sent to the Club by Mr REES from the Cornish Station, Phillack Towans, where it is adventitious but has persisted for some years. See *Rep. B.E.C.* 465, 1924.

†2089. PLANTAGO INDICA L. Eastbourne, Sussex, H. S. SALT, ex RAYNER.

2101. LITTORELLA UNIFLORA Asch. Sweethope Lough, Northumberland, J. E. NOWERS.

†2112. AMARANTHUS ALBUS L. Bitterne, S. Hants, Miss A. B. COBBE; Barry, Glamorgan, SMITH.

†2113 (2). A. THUNBERGII Moq. Bristol, C. & N. SANDWITH.

†2114. A. CHLOROSTACHYS Willd., var. ARISTULATUS Thell. Millbrook, S. Hants, Miss A. B. COBBE.

†2116. A. SYLVESTRIS Desf. Bristol, C. & N. SANDWITH.

(The Chenopods have been named by Dr J. Murr.)

2117. CHENOPODIUM RUBRUM L., var. BLITOIDES Wallr. Cardiff, Glamorgan, DRUCE; Wilbury Hill, Herts; Wretton Fen, E. Norfolk, LITTLE.

2120. C. URBICUM L. Potterne, Wilts, GWATKIN.

†2122. C. MURALE L., var. MICROPHYLLUM Gürke. Bitterne, S. Hants, Miss A. B. COBBE.

†2123. C. OPULIFOLIUM Schrad. Hitchin, Herts, LITTLE.

2124. C. ALBUM L., var. VIRIDE L. Newport, Salop, DRUCE; Budleigh Salterton, S. Devon, Major ORME; Colchester, verging to GLOMERULOSUM Reichb., Dedham, N. Essex [2021], BROWN. Var. LANCEOLATUM (Muhl.). Bude, Cornwall, THURSTON. Var. SUBFICIFOLIUM Murr. Colchester, N. Essex, DRUCE.

†2124. C. PSEUDOSTRIATUM Zschacke. Hythe Quay, Colchester [2314], N Essex, BROWN.

†2125. C. leptophyllum Nutt. Alverstone, Isle of Wight, Rayner.

2127. C. glaucum L. Edenbridge, Kent, Mr Justice Talbot; Rocester, Hon. Wm. Dawson; N. Staffs, Ridge.

†2127 (2). C. ambiguum (R. Br.). Bristol, N. Sandwith.

†2128. C. Vulvaria L. Airdrie, Lanark, Grierson.

†2130. C. ambrosioides L. Eastleigh, S. Hants, Rayner.

†2131. C. Botrys L. Flint, A. Dallman.

†2131 (5). C. Zschackei Murr. In good condition close to the Maltings, Hythe Quay, Colchester, July 1925, Druce. Here also "sed paullum commixtum cum *C. albo* videtur," teste Murr. Also [2313] from same place, August 1925, G. C. Brown.

†2133. C. capitatum Asch. Near Mills, N. Somerset, Mrs Lindsay.

†2153 (10). Axyris amaranthoides L. Port Meadow, Oxon, 1925, Gambier-Parry; Stoughton, Leicester, Bemrose; St Austell, Cornwall, Tressider.

†2168. Salsola Kali L., var. tenuifolia Reichb. Bristol, Lady Davy; Cardiff, Druce & Smith, teste Thellung.

†2168. Phytolacca americana L. Chillerton, Isle of Wight, Young, ex Rayner.

2169. Polygonum dumetorum L. Bishopstoke, S. Hants; Alverstone, Isle of Wight, Rayner. Sp. non vidi.

2171. P. Bistorta L., var. album. By the Teith, Callander, W. Perth, 1925, Druce.

*2172. P. viviparum L. Peebles in 1715, see Balfour.

2178. P. mite Schrank. Shapwick Moor, N. Somerset, Mrs Todd, teste Danser. The plant is infested with *Sphacelotheca hydropiperis*. I follow Schinz and Thellung in using the name *P. mite*.

†2180. P. EQUISETIFORME S. & S. Airdrie, Lanark, GRIERSON.

2182. P. RAII Bab. Turnberry, Ayr, H. K. A. SHAW.

†2183. P. BELLARDI All. Bristol and Avonmouth, C. & N. SANDWITH. Not seen by me.

†2183 (2). P. PATULUM M.B. Cardiff [C. 21], DRUCE & SMITH.

†2185 (3). P. PLEBEJUM R. Br. Probably this, Hasketon, Suffolk, H. K. A. SHAW, teste DANSER.

†2197. RUMEX PATIENTIA L. Stone Marshes, W. Kent, 1923, two large plants by the side of a dyke, ST J. MARRIOTT. Det. DRUCE.

†2199. R. ALPINUS L. Morridge Leek, Staffs, Dr MCALDOWIE; Leadburn, Peebles, BALFOUR.

2200. R. OBTUSIFOLIUS L. (*agrestis*), var. UNIGRANUS Danser. Stoke Bishop, Walton, Surrey, DRUCE.

2200. R. OBTUSIFOLIUS × VIRIDIS Sibth. = R. DUFFTII Haussk. Between Putney and Barnes, Surrey [214], 1911, BRITTON. See *Rep. B.E.C.* 1911, where it is named × R. DUFFTII by DANSER.

†2201. R. SANGUINEUS L. Rare at Inverness, WEBB. Sp. non vidi.

2206. R. PALUSTRIS Sm. Acle, Norfolk; Chard, Somerset. E. S. MARSHALL.

2207. R. MARITIMUS L. Clifton, Notts; Swansea Dock, Glamorgan, WEBB; Whittlesey, Hunts, DRUCE.

*2209. R. ARIFOLIUS All. Cuochan, W. Ross, at about 400-800 feet, and on the same range of rocks in W. Sutherland, DRUCE.

†2210. R. SALICIFOLIUS Weinm. Twyford Mill, Berks, 1925, Mrs WEDGWOOD; Port Meadow, Oxon, GAMBIER-PARRY.

†2210. R. OBOVATUS Danser. Southwick, Sussex, Miss COTTES.

†2210 (3). R. DENTATUS L. Par, Cornwall, MEDLIN; Manifold Valley, Staffs, Miss A. B. COBBE.

†2210 (4). R. MAGELLANICUS Gris. Cardiff, SANDWITH and DRUCE. Named at Kew.

2212. ASARUM EUROPAEUM L. Rutland, BEMROSE.

†2213. ARISTOLOCHIA CLEMATITIS L. Grounds of Hampton Court, Middlesex, 1925, Miss G. BACON.

2215. DAPHNE MEZEREUM L. Beeston Tor, Stafford, J. A ANDLEY.

†2216. HIPPOPHAE RHAMNOIDES L. Gairloch, W. Ross, DRUCE.

2217. VISCUM ALBUM L. On *Robinia Pseudacacia*, Singleton, Glamorgan, WEBB.

†2229. EUPHORBIA VIRGATA W. & K. Prestwood, Bucks, in some quantity, Mrs DEBENHAM.

†2241. BUXUS SEMPERVIRENS L. Large specimens at Mellte Castle, Brecon, WEBB.

2243. MERCURIALIS ANNUA L. Leicester, BEMROSE; Singleton, Glamorgan, WEBB.

2246. ULMUS SARNIENSIS (Loud.). Heathencote, Northants. DRUCE.

2246. U. PLOTII Druce. Heathencote. Northants, DRUCE: near Stondon Vic, Beds, LITTLE.

2250. URTICA DIOICA L., var. ANGUSTIFOLIA W. & G. Abbey Wood. W. Kent, ST J. MARRIOTT.

2254. MYRICA GALE. L. Very large specimens. five feet high, under larch at Holme, Hunts, 1925, DRUCE.

†2258. ALNUS INCANA Willd. Bradoonie, Forfar, R. GRIERSON.

†2263. QUERCUS CERRIS L. Penzance, Cornwall, Miss TODD: near Elton, Hunts, large trees, DRUCE.

†2264. Q ILEX L Naturalised on screes at Caswell, Glamorgan. WEBB.

†2265 (2). Juglans regia L. Limestone cliff, Widegate, Glamorgan, Webb.

2266. Fagus sylvatica L. Seedlings on rocks above Rogie Falls, East Ross, Webb.

[Platanus orientalis L., genuina. Runcton Holme Rector's Garden and meadow opposite Crow Hall, Denver, W. Norfolk, 1924. Det. A. Henry; edge of Piper Harrow Park, W. Surrey (many P. acerifolia in Park), 1925, Little.]

(The Salices have been named by Mr J. Fraser.)

2267. Salix pentandra L. Near Leicester, Bemrose; Stafford, Druce and Curtis.

2269. S. alba L., var. caerulea (Sm.). Elton, Hunts, Druce.

†2272. S. daphnoides Vill. Near Penzance, W. Cornwall, Miss M. Brown. Var. pruinosa (Wendl.) Near Petersfield, S. Hants, Druce

2273. S. viminalis L., var. linearifolia W. & G. Near this Langdon Beck, Durham, Druce.

2273. S. acuminata Sm. Kingston, Surrey, Fraser.

2275. S. caprea × viminalis = mollissima Sm., non Ehrh. Titsey Park, Limpsfield, Surrey, Fraser.

2276. S. aurita × caprea. Wood near Parkhurst House, W. Sussex, Little; Oxted, Surrey, Fraser.

2276. S. aurita × cinerea = S. lutescens A. Kern. Oxted, Surrey, Fraser; Holme, Hunts, Druce.

2276. S. aurita × pentandra = ludificans And. Sedbergh, N.W. Yorks, Trapnell.

2277. S. cinerea × viminalis = S. Smithiana Willd. Weybridge, Surrey, Fraser.

2278. S. REPENS L. Dollar Law, Peebles, BALFOUR. Var. FUSCA (Sm.). Culbin Sands, Elgin; Holme, Hunts, DRUCE.

2279. S. NIGRICANS × PHYLICIFOLIA Wimm. Langdon Beck, Durham, June 1925, DRUCE.

2296. CERATOPHYLLUM AQUATICUM agg. Hersol, Glamorgan, Miss VACHELL.

2297. C. DEMERSUM L. The Orkney specimens (Trans. Bot. Soc. Edin. 134, 1917) prove to be *Utricularia major*. See Johnston, *l.c.*, 1925. The vice county 111 record must be deleted.

*2304. NEOTTIA NIDUS-AVIS Rich. Glen, Peebles, BALFOUR.

*2305. LISTERA OVATA Br. Glen, Peebles, BALFOUR.

2306. L. CORDATA Br. Moor west of Robin Hood Bay, N.E. Yorks, Mrs L. LITTLE.

2310. GOODYERA REPENS Br. Very abundant on the Culbin Sands, Elgin, DRUCE; Nethy Bridge, Easterness, Lord HENLEY.

2320. ORCHIS PURPUREA Huds. Near Godmersham, E. Kent, Mrs ARMITAGE. The specimens sent showed a considerable range of variation. One had small narrow divisions of the flower and this I suspect has been mistaken for *O. militaris*.

2324. O. MORIO L., var. CHURCHILLII Druce. Between Yateley and Cricket Hill, ? Hants; near Chobham, Surrey, MONCKTON.

2325. O. PRAETERMISSA Druce. A seedling of the original plant was flowered in 1925 by B. S. OGLE. It was like its parent. [Carronville, near Paris, 1925, T. A. STEPHENSON.] Colbren, near Glamorgan, WEBB. Var. PULCHELLA Druce. Teesdale, Durham: Cronkley, York; Gairloch, W. Ross, DRUCE.

2325. O. PRAETERMISSA × FUCHSII. Groby Pool, Leicester, BEMROSE; near Lyme Regis, Dorset, MONCKTON; probably this from Wrexham, Denbigh, D. A. JONES.

2325 (3). O. PURPURELLA Steph. Gairloch, Poolewe, W. Ross, DRUCE; Lake of Menteith, Miss TODD.

2326. O. INCARNATA L., var. (white flowered). Redgrave Fen. Suffolk; Blo Norton Bog, Norfolk, DRUCE.

2327. O. MACULATA L., vera. [Loeso Dania, C. H. Ostenfeld]; Stow Bedon, W. Norfolk; Banghurst, Berks. TRETHEWY; Poolewe. Gairloch, W. Ross; Cnochan, W. Sutherland, DRUCE; Lake of Menteith, Aberfoyle, W. Perth, Miss TODD. Var. LEUCANTHA Druce. Histon Common, Dorset, MONCKTON; Dundonnell, W. Ross. DRUCE; Langley Hilden, Herts, LITTLE.

2327 (2). O. FUCHSII Druce. Alconbury, Stibbington, Hunts. July 1925, DRUCE; a singularly-bracteate form, Petersfield, Hants. DRUCE. × O. TRANSIENS Druce (O. FUCHSII × MACULATA). Strensall, York, H. BRITTEN.

2327 (3). O. O'KELLYI Druce. Surrey. FRASER; Melkinthorpe. Westmoreland, H. BRITTEN.

*2329. O. MASCULA L. West Linton, Peebles, BALFOUR.

2331. O. HIRCINA Sw. Found by a school girl near Stockbridge, Hants, ex Mrs GUY BARING; also from Shaldon, near Alton, ex RAYNER.

2335. OPHRYS TROLLII Heg. Near Seaton, Devon, BARR in *Devon and Exeter Gazette*; Winchester, 1925, H. SMITH.

2337. HERMINIUM MONORCHIS Br. Coddenham, Suffolk, 1925. Hon. EVELYN WOOD.

2340. HABENARIA VIRIDIS Br. Nantwy-Ffrith, Denbigh. D. A. JONES.

2342. H. VIRESCENS Druce. Shaftesbury. Dorset, Lady MACKINNON; Upton. Hunts. DRUCE.

†2357. CROCUS ALBIFLORUS Kit. Fairy Hill. Gower, Glamorgan, WEBB.

†2360. SISYRINCHIUM ANGUSTIFOLIUM Mill. In a moist portion of wet heath, Chobham Common, Surrey, M. J. THOMAS, ex Miss BLACKWELL; near Milngavie, Dumbarton, K. W. BRAID, one plant in a strawberry field.

†2372. NARCISSUS BIFLORUS Curt. Wood at Oxwich, Glamorgan, HYDE.

†2378. LEUCOJUM VERNUM L. Damp wood, Caswell, Glamorgan, Dr S. P. ROWLANDS & WEBB.

†2382. RUSCUS ACULEATUS L. In a covert, Cum, near Dyserth, Flint, B. ALLEN. ? planted.

2383. ASPARAGUS OFFICINALIS L. On the cliffs low down at Corbière, Guernsey, Mrs HICHENS.

†2390. ASPHODELUS FISTULOSUS L. Fowey, Cornwall, TRESSIDER.

2395. ALLIUM SCORODOPRASUM L. Warton Crag, W. Lancs, WHELDON & WILSON.

†2402. A. CARINATUM L. Church Stretton, Salop, 1925, ALICE C. O. JAUDE.

2408. HYACINTHUS COMOSUS L. Par, Cornwall, MEDLIN.

†2411 (2). SCILLA HISPANICA Mill. Completely naturalised at Penrhos, Anglesey, DRUCE & Lady K. STANLEY; Oxwich Dunes, Glamorgan, WEBB.

†2413. ORNITHOGALUM UMBELLATUM L. Wood at Oxwich, Glamorgan, HYDE.

†2416. LILIUM MARTAGON L. About Luppitts, Devon, not planted, HARRIS in *Trans. Dev. Ass.*

†2419. TULIPA SYLVESTRIS L. Alton, Staffs, Mrs DAWSON, ex BOYDON RIDGE.

*2422. COLCHICUM AUTUMNALE L. St Michael's-on-Wyne, W. Lancs, J. MOSS, ex WHELDON & WILSON.

2431. JUNCUS BALTICUS Willd. On the Culbin Sands, Elgin, July 1925. Not included in Stewart and Patton's paper in *Rep. B.E.C.* 267, 1923, but locally plentiful, DRUCE.

2432. J. FILIFORMIS L. Crummoch Water, Cumberland. HAINES.

2436. J. ALPINUS Vill. Mail Gruaidh, Miss TODD; Aberfeldy, M. Perth, Hon. Mrs CAMPBELL. I think these specimens, though young, may go to the above. It is strange that so abundant and widely distributed as this plant is in Norway and Sweden it should be so scarce and untypical in Scotland.

2437. J. BULBOSUS L. Schiehallion, W. Perth, Hon. Mrs CAMPBELL.

2439. J. COMPRESSUS Jacq. Rocmaine Bay, Guernsey, Miss M. COBBE, given in Marquand's Flora for that Island.

†2441. J. TENUIS Willd. Margin of Adams Pond, Richmond Park, 1925, H. W. KEW; West Kent, ST J. MARRIOTT; Woking Common, Surrey, J. R. TOMLIN; Cardew, Cornwall, HOSKING.

2442. J. BUFONIUS L. A tall slender plant, near *giganteus* A. & G. Guernsey, Miss M. COBBE.

2443. J. MUTABILIS Lam. With large bracts at Chyvean, Cornwall, 1925, Major ORME.

2444. J. CAPITATUS Weig. Still in Anglesey, 1925, Lady K. STANLEY.

2454. JUNCOIDES MULTIFLORUM Druce. Dundonnell, W. Ross, with dark fruit. Wood Walton, Hunts, DRUCE. Var. CONGESTUM Druce. Wood Walton, Hunts; Aqualate, Stafford, DRUCE.

2455. J. PALLESCENS (Bess.) Druce. Still at Wood Walton but very scarce. DRUCE.

*2461. TYPHA ANGUSTIFOLIA L. Cheviot, HESLOP-HARRISON.

*2462. SPARGANIUM NEGLECTUM Beeby. E. Donyland, N. Essex [2324], G. C. BROWN.

*2464. S. SIMPLEX Huds. Peebles, BALFOUR.

2466. S. MINIMUM Fr. Strathpeffer, E. Ross; Norton Bog, Staffs, DRUCE; Tubber Bog, Co. Galway, O'KELLY.

*2468. ARUM MACULATUM L. Kings Meadow, Peebles, BALFOUR.

2478. ELISMA NATANS Buch. In quantity in shallow water, Norton Bog, Staffs, Sir ROGER CURTIS!

2479. SAGITTARIA SAGITTIFOLIA L. Perhaps native at Keens of Gowerton, Glamorgan, WEBB.

2488. POTAMOGETON COLORATUS Horn. Tubber Bog, Galway, O'KELLY; *Leighton Beck, W. Lancs, WILSON.

*2497. P. ANGUSTIFOLIUS Presl. Malham Tarn, Yorks, Dr W. H. PEARSALL, ex W. A. SLEDGE.

2504. P. COMPRESSUS L. Aqualate, Salop, DRUCE & Sir R. CURTIS.

2511. P. INTERRUPTUS Kit. Canal at Neath, Glamorgan, WEBB & MARKS.

2508 (2). P. PANORMITANUS Biv., var. MINOR Biv. In quantity in the dykes near Lewes, Sussex, DRUCE, Lady ALETHEA BUXTON & Mr JUSTICE TALBOT; the type at Loch Scarmclett, Caithness, LITTLE, ex A. BENNETT.

2527. CYPERUS LONGUS L. Water meadow, north of Winton, N. Hants, R. W. BUTCHER; † Margam Lake, Glamorgan, probably planted there, WEBB.

2535. SCIRPUS TABERNAEMONTANI Gmel. Aqualate, Stafford with S. SETACEUS L., DRUCE.

2542. S. SETACEUS L., var. PEDICELLATUS Druce. On peat, Walton-in-Gordano, N. Somerset; by the river Rawthey, Sedbergh, Yorks, TRAPNELL.

2546. S. RUFUS Schrad. Grimsby, N. Lincoln, G. W. ALLISON.

2556. MARISCUS MARISCUS (L.), comb nov. (*Cladium Mariscus*). Very fine at Holme, Hunts, July 1925, DRUCE; *Newton Abbot, Devon, 1868, R. M. LINGWOOD in *Hb. Ex. Mus.*, teste W. D'URBAN. First Devon record. The parish of Hawkchurch, which yields *Mariscus*, has been transferred from Dorset to Devon which therefore has now two localities for the plant.

*2547. ERIOPHORUM PANICULATUM Druce. Dolphinton, Peebles, BALFOUR.

2560. CAREX ACUTIFORMIS Ehrh. Ffrith, Flint D. A. JONES.

[*2561. C. VESICARIA L. Bitch Cr~~a~~aig, Peebles, BALFOUR.]

2564. C. INFLATA Huds., var. A large fruited form with shorter beaks near Ballyvaghan, Co. Clare, O'KELLY; a plant with much smaller, less round, and longer beaked fruits at Callander, W. Perth, where a hybrid with *vesicaria* also grows. Here, too, is a form with short female spikelets subtended by a male spikelet 25-36 mm. long.

*2569. C. STRIGOSA Huds. Lamellen, St Judy, Cornwall, THURSTON.

2574. C. PUNCTATA Gaud. Moulin Huet, Guernsey, Miss COBBE.

2576. C. FLAVA L., var. OEDOCARPA And. Cnochan, W. Ross and West Sutherland. A curious form perhaps comes under this with a solitary female spikelet of rather long beaked fruits at Strathpeffer, E. Ross, DRUCE.

2576 (2). C. LEPIDOCARPA Tausch. Cnochan, W. Ross and W. Sutherland; Strathpeffer, E. Ross, DRUCE; Wastwater, Cumberland, Miss COBBE.

2577. C. OEDERI Retz. Culbin Sands, Elgin; Ranworth, E. Norfolk, Miss D. CATOR.

2578. C. EXTENSA Good., var. PUMILA Anders. Culbin Sands, Elgin, Druce. Not included in Stewart and Patton's paper in *Rep. B.E.C.* 267, 1923; Scolt Head, E. Norfolk, H. K. A. Shaw.

2581. C. ornithopoda Willd. In the grounds at Flass, Westmoreland, Miss Dent.

2587. C. pilulifera L., var. longibracteata Lange. Ben Lawers, M. Perth, Miss Todd.

2589. C. pallescens L. Silk Wood, Gloster, Lady Holford.

2591. C. panicea L. Mr W. D. Miller sent a form from Shapwick peat-moor in which the small female spikelets are often reduced to a single fruit, and the male spikelets are extremely slender—forma **depauperata.**

2592. C. magellanica Lam. Flanders Moss, ? Perth or Stirling, Miss Todd, teste N. Sandwith.

*2602. C. aquatilis Wahl. Between Silloth and Bowness, Cumberland, Miss Bacon. V. sp.

2613. C. vulpina L., var. nemorosa Lej. Bradford-on-Avon, Miss Todd.

*2614. C. muricata L. Dolphinton, Peebles, Balfour.

2616. C. divulsa Stokes. Salcombe, Devon, 1925, W. D. Miller.

2617. C. Boenninghausiana Weihe. Bank of canal, one mile from Bude, Cornwall, Major Orme.

*2620. C. disticha Huds. Dolphinton, Peebles, Balfour.

2627. C. pauciflora Light f. Dalnaspidal, Perth, in abundance, Druce.

2628. C. pulicaris L., var. montana (Pugsl.). Cnochan, W. Ross and W. Sutherland, Druce.

†2632. Panicum Crus-galli L. Fowey, Cornwall, Tressider; Noirmont, Rocquand, Jersey, Miss M. Cobbe.

†2636. P. MILIACEUM L. St Martin's, Jersey, Miss A. B. COBBE.

†2636. P. LAEVIFOLIUM, var. AMBOENSE Hackel. Bitterne, Portswood and Millbrook, S. Hants, Miss A. B. COBBE.

†2639. SETARIA VIRIDIS Beauv., var. MAJUS Gaud. Colchester [2308], BROWN.

†2650. PHALARIS AQUATICA L. (*caerulescens*). Airdrie, Lanark, GRIERSON.

†2653. P. MINOR Retz. Gweak, Cornwall, Major ORME.

†2654. P. PARADOXA L. Gweak, Cornwall, Major ORME.

2655. P. ARUNDINACEA L. Goosepen Marsh, Beaumont. See *Fl. Jersey*, p. 38, 1903. Corroborates Piquet's record for Jersey. Not observed by Lester-Garland. L. ARSENE.

2662. ALOPECURUS PRATENSIS × GENICULATUS. Sandy bank, Acle, Norfolk, Miss TODD.

2673. PHLEUM PRATENSE L., var. LONGIARISTATUM Parn. Gt. Orme's Head, Carnarvon, May 1925, DRUCE.

†2674. P. ALPINUM L. Alien. Condorrat, Dumbartonshire, GRIERSON.

2678. P. ARENARIUM L. Inland in field at Berechurch, N. Essex, 1924, DRUCE; Port William, Wigtown, Miss BANCROFT.

†2683. AGROSTIS VERTICILLATA Vill. Kings Mill, Guernsey, Miss M. COBBE.

2685. A. NIGRA With. Newport, Salop, July 1925, DRUCE; Ford, Sussex, B. REYNOLDS.

2685. A. CAPILLARIS L., var. ARISTATA (Parn.) Druce. Ford, Sussex, B. REYNOLDS.

2687. A. CANINA L. Holme, Hunts, DRUCE.

2690. POLYPOGON MONSPELIENSE L. Hornsey Island, Sussex.

H. W. Kew; an extraordinary, viviparous form occurred at Cardiff, where the plants were partly submerged, Druce.

2693. Calamagrostis Epigeios Roth. Withington, Gloster, Greenwood; with very open panicles at Holme, Hunts, Druce.

2694. C. Calamagrostis (L.) comb. nov. Miss D. Cator noticed the albino form at Woodbastwick, E. Norfolk.

*2697. Deyeuxia neglecta Kunth, var. borealis (Laest.). Shore of Scawdy Island, Lough Neagh, Tyrone, 1870, S. A. Stewart; Lough Neagh, Derry, 1909, Druce.

2698. Gastridium ventricosum S. & T. Budleigh Salterton, Devon, Major Orme.

†2699. Apera Spica-venti Beauv. Bridge of Allan, by roadside to Stirling, July 1925, Druce.

2719. Avena fatua L. Cardiff, Glamorgan; Godmanchester, Hunts; foreshore, Ullapool (as *intermedia*), with A. sativa L., Druce; *Peebles, Balfour.

*2722. A. pubescens Huds. Walkerburn, Peebles, Balfour.

†2727. Capriola (Cynodon) Dactylon O.K. Near the river-bridge, Hampton Court, Middlesex, Miss Bacon; Shore, Eling, S. Hants, Rayner; Bath, Kingsbridge, Miller.

†2737. Cynosurus echinatus L. Near St Albans, Herts, in a wood, Druce; sandhills at Mablethorpe, Lincoln; Leicester, Bemrose; East Sheen, Surrey, H. W. Kew.

2739. Koeleria gracilis Pers. Port William, Wigtown, Miss Bancroft. Var. britannica (Domin). Bradbury Rings, Dorset, Monckton.

*2742. K. albescens DC. Sands of Barry, Forfar, Lady Davy.

2757. Briza minor L. Bel Royal, Jersey, Miss A. B. Cobbe.

†1758. **Poa Chaixii** Vill. Edd~~ing~~leston, Peebles, Balfour.

2759. P. PRATENSIS L., var. LATIFOLIA Weihe. Elton, Hunts. DRUCE.

*2759 (2). P. IRRIGATA Lindm. By Loch Ard, W. Perth, Miss TODD.

†2760. P. PALUSTRIS L. Barry, Glamorgan [CC. 20], DRUCE.

2765. P. COMPRESSA L. Elton, Hunts, DRUCE.

2768. P. BULBOSA L. Rye Golf Links and Camber Sands, E. Sussex, 1925, A. O. HARRISON.

†2774. GLYCERIA DISTANS Wahl. Leith, 1925, DRUCE.

2776. G. MARITIMA Wahl. Ullapool, W. Ross, July 1925, DRUCE.

(The Festucae have been named by Mr W. O. Howarth.)

2781. FESTUCA ARUNDINACEA Schreb. Duddon Estuary, Lake Lancs, W. H. PEARSALL.

2782. F. ELATIOR × LOLIUM PERENNE. Witterslack, Westmoreland, H. W. KEW. As one of the specimens has awned glumes can *italicum* be present? EDITOR.

2783. F. SYLVATICA Vill. Ecnon Gam and Gwladys Falls, Glamorgan, 1925, WEBB.

2785. F. RUBRA L., var. FALLAX (Thuill.). Aylestone, Leics, HORWOOD; Llandough, Cardiff, Glamorgan, WADE. Var. JUNCEA (Hack.). Ainsdale, etc., S. Lancs; Fleetwood, W. Lancs, WHELDON. Var. TENUIFOLIA Howarth. Rumney, Monmouth. WADE. Var. BARBATA (Hack.). Canal, Narborough, Leics, WADE; Wallasey, Cheshire, LEWIS; Hall Road, S. Lancs, WHELDON. Var. ARENARIA (Hack). Llantwit Major, Glamorgan, WADE. Var. GRANDIFLORA (Hack.). Canal near Dane's Camp, Northants; Woodhouse, Leicester; Rumney, Monmouth, WADE; Merton, W. Norfolk, ROBINSON; Walton, S. Lancs, WHELDON; Southampton, RAYNER; an extraordinary looking plant by the river Test near Stockbridge, Hants, Miss G. BACON, a remarkably robust plant 5 to 6 feet high with a beautiful pale-green panicle; Southwick, Sussex, a smaller and less characteristic plant, DRUCE. Var. GLAUCESCENS (Hack.). Ullapool, W. Ross, 1925, DRUCE; Sully Isle, Glamorgan, WADE.

2787. F. OVINA L., var. HISPIDULA Hack. Nant Dhu, Brecon; Llyn Faur, Glamorgan, WADE; a viviparous form on Cnochan rocks, W. Ross and W. Sutherland, DRUCE.

2787. F. CAPILLATA Lam. Queen's College Grounds, Kew; St Martin's Graveyard, Jersey, L. ARSENE; Inchnadamph, W. Sutherland, DRUCE.

2787 (2). F. JUNCIFOLIA St Am., teste Howarth. Exmouth, Devon, BARTON; Poole, Dorset, *Hb. Kew;* Felixstowe, Southwold, Suffolk, *Hb. Wales;* Carstor, BAILEY; Hunstanton, Norfolk, ADAMSON; Skegness, Lincs, DRUCE, BAILEY, etc.; Hartlepool, Durham, BAILEY; Fife, BOSWELL; Carnoustie, Forfar, SHOOLBRED.

2790. F. DANTHONII A. & G. (*ciliata*). At Christchurch Hospital railway station, Sussex, for two years, B. REYNOLDS.

†2794. BROMUS RIGENS L. Christchurch, S. Hants, Mrs S. A. ROOKE.

2795. B. RIGIDUS Roth. Beauport, Jersey, Miss A. B. COBBE.

†2797. B. TECTORUM L. Thetford, where it has been established for over 30 years, distributed this year, DRUCE; Gweak, Cornwall, Major ORME.

†2803. B. UNIOLOIDES H.B.K. Bordeaux, Guernsey, Miss A. B. COBBE.

†2806. B. SECALINUS L. A pretty form with short spikelets, Godmanchester, Hunts; Nuneham, Oxon, DRUCE; gravel pits, Surrey, H. W. KEW.

†2809. B. ARVENSIS L. Moulin Huet, Guernsey, Miss A. B COBBE.

†2810. B. BRACHYSTACHYS Hornem. Donaghadee, Co. Down, C. D. CHASE. Named at Kew.

2811. B. hordeaceus L., var. pseudo-racemosus A. & G. Donaghadee, Co. Down, C. A. Chase.

2819. Brachypodium pinnatum Beauv. Aconbury, Hunts, glabrous and slightly hairy forms occur, Druce; *Kenmore, Perth. new to Scotland, Druce. ? native. Thellung passes it.

†2821. Lolium temulentum L. St Brelade's, Jersey, Miss A. B. Cobbe.

2824. L. perenne L., var. sphaerostachys Mast. Aberfoyle, M. Perth, Miss Todd; between Great House and Seaton, Northumberland, 1877, Rev. H. E. Fox.

2828. Agropyron pungens R. & S. Emsworth, W. Sussex, H. W. Kew; Vaizon. Guernsey, Miss Cobbe.

2830. A. repens Beauv., var. Leersianum Gray. Ullapool. W. Ross, Druce. Var. lasiorachis Hack. Glasgow. Lanark, Grierson. × junceum = A. Hackelii Druce. Arne, Dorset, Sandwith.

2831. A. caninum Beauv. Robust specimens, with very long inflorescences, Melvich, W. Sutherland, Druce.

†2854. Hordeum brevisubulatum Trin. Bitterne. S. Hants, Miss A. B. Cobbe.

†2857. Elymus sibiricus L. Coatbridge. Lanark, Grierson. Named at Kew

2860. Juniperus communis L. Ystradfellte, Brecon, Webb; *Langhaugh, Peebles, Balfour.

2869. Equisetum palustre L., var. longiramosum Klinge. Redgrave Fen. Suffolk, Druce; Wood Bastwick. E. Norfolk, Miss D. Cator

2870. E. limosum L., var. fluviatile (L.). The Wilderness. Gwersyllt, Denbigh, D. A. Jones.

2877 Adiantum Capillus-veneris L Herm. Channel Isles. 1923, Templeman.

*2879. PHYLLITIS SCOLOPENDRIUM Greene. Glen, Peebles, BALFOUR.

2880. ASPLENIUM MARINUM L. At 200 ft. alt., Bolt Head. Devon, W. D. MILLER.

*2882. A. VIRIDE Huds. Glen, Peebles, BALFOUR.

*2892. POLYSTICHUM ANGULARE Presl. Glen, Peebles, BALFOUR. Not seen by EDITOR.

2893. P. LOBATUM Huds. Cnochan, W. Ross, July 1925, DRUCE.

*2898. DRYOPTERIS SPINULOSA O.K. Peebles, BALFOUR.

2899. D. ARISTATA Druce, var. ALPINA (Moore) Druce. Loch na Chat, M. Perth, Miss TODD.

2906. CYSTOPTERIS FRAGILIS Bernh. Near Farley, N. Staffs. PICKARD.

2919. BOTRYCHIUM LUNARIA Sw. Llandrindod. Radnor, ex Miss OWEN; Billingham, Durham, at 30 ft. alt., J. E. NOWERS.

2930. LYCOPODIUM INUNDATUM L. In some quantity, Culbin Sands, Elgin, DRUCE.

*2931. L. SELAGO L. Dollar Law, Peebles, BALFOUR.

2923 (2). AZOLLA FILICULOIDES Lam. Flats, E.N.E. of Sandwich, E. Kent, 1925, Miss A. STONE. Det. J. E. LITTLE. The glochidia (should not this be glochinia, by the etymology?) appear, under $\frac{1}{4}$ in. power, to be some aseptate, but some with one septum. The septa in *A. caroliniana* are at least three in number as figured in Von Martius *Fl. Brazil.* i., part 2, p. 658 and plate. The Sandwich Entomological Laboratory (See *Journ. Bot.* 1920) has been experimenting on "the possible use of *Azolla filiculoides* as a deterrent to Anopheles breeding." This may account for the appearance of the plant on Sandwich Flats, J. E. LITTLE; near Worcester, Rev. Dr PAUL.

NOTES ON THE BRITISH EUPHRASIAE.

By William Harrison Pearsall.

The publication of a new edition of the London Catalogue seems an appropriate occasion for reviewing our present knowledge of the British Euphrasiae, and estimating our progress toward a stable opinion of the distinctions between the various species the list includes. Looking back over the past ten years one notes quite a number of definite phases in our conflicting views. We can remember the time when *E. curta*, var. *glabrescens* was all the rage, and every subglabrous plant, which presented any difficulty, was promptly referred to this variety. It would be edifying to overhaul many herbaria specimens and see what could be discovered under this label! We recollect, too, the temporary bias toward *E. stricta* and *E. brevipila*, followed more recently by the meteoric appearance and disappearance of *E. Tatarica* and *E. fennica*. On the whole, perhaps, though progress has been slow, some real advance has been made. Taking the species in L.C. order, we are generally agreed that, although many strict forms of *E. nemorosa* have been wrongly referred to *E. stricta*, the latter species may, occasionally, be found in Britain. The most typical examples in my own possession were gathered by Mr Charles Bailey at Llanberis, 15/8/88, and named by Townsend. They make a nearer approach to continental specimens than is usual with British examples and possess not only the strict, erect, and robust stems—22-27 cm.—but also the more erect ("stroked-up") bracts of the species and numerous mature narrow, truncate capsules (relatively small for the size of the plants) and always shorter than the calyx-teeth. The teeth of the bracts are aristate, and the arista is transparent under the microscope.

I am strongly of opinion, however, that much of the present confusion in regard to the Euphrasiae results from our futile attempts to get them to "match" continental specimens, or to perfectly agree with descriptions based, in the main, upon such specimens. The British Isles lie further west than other parts of Europe, and, moreover, possess a more insular and equable climate than that of any other European country in the same latitude. The influence of these climatic conditions upon plants must be very considerable, and is bound to result in differences between British plants and continental " types " grown under dissimilar climatic conditions. So far—it appears to me—we have not made sufficient allowance for these inevitable differences.

E. suecica Murb. and Wettst., a parallel and earlier-flowering form of *E. stricta*, is unknown to me as being authentically British.

E. borealis Towns. has been the cause of considerable divergence of opinion during recent years, and this may possibly be due to over-emphasis by both Townsend and Bucknall of the obtuse leaves and their generally obtuse teeth. At any rate, this character should not be too much relied on in separating this species from *E. brevipila*. Far more confusing, however, is the fact that undoubted specimens of *E. borealis* may occasionally be found possessing a few short-stalked glandular hairs. I have seen these in Scottish specimens, and further, am now quite convinced that my plants from Greenscoe, Dalton-in-Furness, June 28, 1918, labelled *E. brevipila*, var. *subeglandulosa*, are *E. borealis*, notwithstanding the fact that some of the plants possessed sparse glandular hairs. This species varies greatly in size—as may readily be seen by comparing plants from the North of Scotland with those from the Mendips—and the Scottish examples often greatly resemble *E. brevipila*.

E. brevipila is the first " glandular " plant on the L.C. list, and has been often wrongly named simply through the inability of members to see its glandular hairs. These are relatively short—compared with those of *E. Rostkoviana* and *E. hirtella*—usually consisting of one straight cell, topped by an amber-coloured gland. Those of *E. Rostkoviana* are much longer—3, 4 or 5 celled—therefore obviously " jointed," flexuose or even curly. The short straight glandular hairs of *E. brevipila* are most readily found on the bases of the bracts and calyces. They occur also on the teeth of the calyx, the surfaces of the leaves and bracts, and may frequently be found on the stem, too, by diligent search. Examination for these glandular hairs should be carried out under the microscope, and in daylight. Artificial light—being often yellow—masks the colour of the gland to a large extent, and subsequent use of good light during the day often reveals unsuspected glands. An ordinary pocket-lens is quite useless for the purpose in question, but a microscope having a good one inch objective and low eye-piece gives excellent results. The use of higher powers limits the field of view and requires more continuous focussing. As the presence or absence of glands—and the nature of those glands—is such an important diagnostic factor in the cumulative evidence upon which ultimate determination is based, it is imperative that we should adopt reliable means of ascertaining the facts.

E. nemorosa Pers. calls for little comment, as its general characters are now well established. Possibly, however, its extreme variability is insufficiently recognised by some of our members. At the one extreme we may find huge bush-like plants—each capable of covering a sheet—and at the other short, stubby plants consisting of a congested mass of interwoven branches and densely imbricated bracts. Between these extremes, we find on poor pastures in shallow soil with underlying siliceous rocks, slender, sub-simple or little-branched forms—often with relatively larger flowers—which have so often been referred to other species. The clothing, however, is much less variable; all these forms come under var. *ciliata* Drabble. I have never yet seen a specimen of *E. nemorosa*—or, indeed, of any other British Euphrasia—with glabrous foliage. (Singularly enough, Wettstein describes the calyx as glabrous and figures it as hairy!) On the other hand, undoubted *E. nemorosa* may occasionally be found with a few short glandular hairs. This species, in common with *E. Kerneri*, has a marked tendency to produce basal, filiform and adventitious branches when growing among moist herbage—most frequently near the foot of a damp slope.

E. confusa I can only accept with considerable mental reservations. The species was originally described as possessing characteristic yellow flowers; later the description was amended to include *alba;* and in last year's Watson B.E.C. Report, plants having neither of these colours—but the normal Euphrasia markings—were included under the name. This, at any rate, does not suggest stability, and supports my opinion that the yellow corolla is a mere colour-form. The Carpathian *E. Tatrae* shows the same tendency, and occasionally produces an entirely yellow corolla. *E. minima* Jacq. produces—in addition to the f. *flava* Gremli, with yellow corolla—a f. *bicolor* Gremli, with yellow flower, and violet or reddish upper lip; a f. *pallida* Gr. with white flower, and bluish-violet upper lip, and a f. *alba* Favr. with entirely white flowers. The Pansies, too, have the same tendency to produce a yellow corolla.

The flexuous stem of this species may well be induced by habitat conditions, and is frequently seen in other species. All the examples of this species that have so far passed through my hands from various districts appear to me to be either *E. minima* Jacq. or *E. Kerneri.*

The occasionally protruding style, so far from being evidence to the contrary, strengthens my opinion. Mr Lumb pointed out to me years ago that in discriminating between *E. nemorosa* and *E. Kerneri*, the protruding style in some specimens of a gathering, pointed to *E. Kerneri.* Not all the plants will show it, but *E. nemorosa* never does. This character, therefore, adds weight to the balance of evidence in favour of *E. Kerneri.*

As between *E. confusa* and *E. minima* Jacq., the branching of the former is not at all distinctive, in my view. While readily admitting that continental *E. minima* Jacq. is frequently simple, I take strong exception to the view that it is " never more than sparingly branched." Among my own Swiss examples are authentic plants that cannot be so described, and Wettstein states (p. 160) " On lower situations—or among the Southern Alps—becoming often considerably longer (up to 25 cm.), more copiously branched, the leaves more acute and the flowers more numerous," and again, " In shady situations among the relatively lower Northern Alps, this variety (var. *minor* Jord.) is often very large and robust, much-branched and often with large and broad leaves."

Among plants collected by Dr Druce in Sweden last year—and which I have before me at the moment—is an undoubted specimen of *E. minima* Jacq. which is 16 cm. high, and possesses 13 long sub-equal branches, several of them being compound. I agree with Mr Pugsley that the plant in question is markedly luxuriant *E. minima*, and only use it as an example of what this species may become in a congenial environment. It was evidently not without reason that Jacquin took as his original example of this species, a well-branched plant.

Leaving the question of branching, and coming to plants with simple or little-branched stems, what becomes of *E. minima* Jacq.? What of all the erect and simple-stemmed British plants so labelled in our herbaria? Are we to conclude that none of these is rightly named?

E. curta presents little difficulty in its typical form, but its var. *glabrescens* has been responsible for much misunderstanding. We cannot too often emphasise the fact—previously pointed out by Dr Drabble—that the plant is glabrescent *E. curta*, and not *E. nemorosa*.

E. occidentalis has a somewhat restricted range, and characteristic habit. It varies greatly in the quantity and character of its clothing. Here and there one may find the surface of a leaf or bract with only 1 or 2 long hairs; some hairs are short, others awl-shaped or flat. Are the hairs of this, or other, species deciduous? The glandular hairs are usually longer than those of *E. brevipila;* frequently best seen on the midrib of the bract near its apex, but often sparse or absent. The bract-teeth are not infrequently separated by round-based—rather than acute—sinuses, and may be few and obtuse, although usually described as being acute. The capsule is commonly larger and broader than that of *E. curta*.

E. latifolia is still more limited in area and (like the preceding species) may be glandular or eglandular. The statement that " the British plant is generally eglandular " is not confirmed by an examination of the plants. In my experience by far the greater number are glandular. The bracts of this species are very distinctive in being usually cuneate-attenuate at the base, which is without teeth.

E. foulaensis cannot well be confused with any other species. The relatively few coarse teeth of its bracts (usually more *obtuse* than those of *E. latifolia*), its very scanty clothing, robust capsules often with a deep sinus (sometimes, however, long but not markedly notched) and frequently found only high up the stem, distinguish it.

E. gracilis (*E. micrantha* Rchb. is an earlier name) is a very distinctive species, although sometimes mistaken for *E. scotica*. The most reliable distinction between the two species is, perhaps, the relative length of the calyx and its subtending bract. In *E. scotica* the bract is usually very long, equalling or even exceeding the length of the calyx: with *E. gracilis* the bract is commonly much shorter than the calyx. The flowers of both are very small but in the case of *E. scotica* the lower lip is sub-equal to the upper, there is little or no "gape" between them, and they frequently show a primrose tint when dry. In *E. gracilis* the lower lip usually exceeds the upper.

E. septentrionalis is as yet little known except from the North of Scotland, and Cornwall. Plants from these widely-separated districts naturally vary considerably, as indeed do those from the same area. This is especially noticeable in the branching; several of my specimens from the former locality have branches from the base to within an inch of the top of the stem. The adequate published description of the species should result in its being identified elsewhere. I have not yet seen British specimens of *E. hirtella*, which is another interesting addition to our list.

E. fennica Kihl. In my judgment, much of the confusion which has arisen in connection with this species is due to some inaccuracy of detail in the description of it given by Mr Bucknall in *British Euphrasiae*. That of Mr Pugsley (*Journ. Bot.* 1919, 174) is much more correct in regard to the points I wish to raise. The stem is normally simple with "a tendency to branch about the middle"—as Mr Pugsley points out. When the plant is branched it is most often so, at or near the middle (often above only, often above and below, the middle) but never "at the base," in the plants I have examined. Further, in *Brit. Euph.* the dimensions given for the corolla—and also for the leaves—are too small; at any rate, for continental plants. Some years ago the late Mr Charles Bailey lent me his Euphrasiae sheets for examination, among them being a fine series of *E. fennica*, including an authentic sheet "*Leg.* A. Osw. Kihlman." On the latter, the corollas were 8 mm., and the stem-leaves 7-8 mm. On other large continental plants the stem-leaves often reach 10 mm., and in extreme cases—at the nodes—12 mm. As a general rule they are narrowly elliptical or (more broadly) oval in outline, obtuse at the apex, with obtuse or subacute teeth. The bracts are normally very broad-based, generally cuneate and often quite suddenly narrowed into the attachment. A striking feature of the species is the length of the spike (which extends for the greater part of the stem) and the uniformly decreasing lengths—upwards—of its internodes. Mr Bucknall's description of this character is excellent.

I agree with Mr Pugsley (*l.c.*) that the 1917-18 *B.E.C.* sheets sent out under this name, were small forms of *E. Rostkoviana.* I have examined the original Exmoor specimens of Dr Druce and in my judgment they are unquestionably *E. fennica* Kihl. They possess the strict, erect, rather slender habit of that species, and show capsules almost to the base of the stem. The internodes are long below, and regularly decreasing in length upward—visible in most cases to the top of the stem. The bracts, therefore, are regularly disposed, smaller than those of well-developed *E. Rostkoviana*, and much more erect. The plants were evidently gathered late in the season and show abundant fruits but few flowers. The latter are small—about 5 mm.—a feature noted by Dr Lindman in his determination which was confirmed by Dr R. v. Wettstein. *E. Rostkoviana*, similarly, frequently produces quite small flowers and so does *E. hirtella.* As to the status of the plant under notice, I agree that it is intermediate between *E. Rostkoviana* and *E. hirtella* but should be inclined to give it specific rank, for while it possesses several characters of each of these species it does not exhibit many of the chief features of either and has, on the contrary, definite characters peculiar to itself. Both *E. Rostkoviana* and *E. hirtella* when branched usually have the branches well below the middle of the stem; neither species normally shows the central branching of *E. fennica*, although in *E. Rostkoviana* it occasionally happens that the topmost branches (of several pairs) are at the middle of the stem. This latter species also quite frequently produces flowers and fruits down the greater part of the stem—especially when simple. On the whole, I should regard *E. fennica* as being rather nearer to *E. Rostkoviana*—both in its characters and range of distribution—than it is to *E. hirtella*, and this is an added reason for my suggested separation of it from the latter species.

E. Rostkoviana is readily recognised when robust and large-flowered, but in sub-alpine habitats it is often relatively slender and small-flowered. The latter forms have sometimes caused difficulty—and may yet do so—but the published descriptions of *E. hirtella* and *E. fennica*, the most nearly related species, should now make determination more easy. Occasionally, *E. Rostkoviana* is found only slightly glandular, and if, in addition, the stem is simple, may possibly then be taken for *E. montana* Jord., which so far has not been found in Britain. (See over.)

E. Vigursii is a distinctive species apparently confined to Cornwall and Devon.

E. campestris Jord. The only British examples of this species I have yet seen which seem undoubtedly authentic, came from Derbyshire, and were sent me by Dr E. Drabble.

E. Kerneri has a wide distribution, mainly but not exclusively, on limestone. It is sometimes confused with *E. nemorosa*, but possesses much larger and more brightly coloured flowers, an occasional protruding style, bracts of very different shape, a larger capsule, and foliage of much thinner texture. As in the case of *E. Rostkoviana*, the lengthening tube of the corolla cannot be relied upon for diagnosis.

E. salisburgensis can be readily distinguished from other British species by its long leaves—excluding the teeth, from 2-5 times as long as broad—having very few, distant and patent teeth, and by its long capsule, quite commonly without the usual " beard " at the top.

Among species we may possibly yet discover in Britain may be mentioned :—

E. montana Jord. somewhat resembling simple-stemmed forms of *E. Rostkoviana*. If branches are present they are usually above the middle, few and short. Its foliage—especially at the bases of the bracts—possesses the long, curly, glandular hairs of *E. Rostkoviana*, but often sparsely; all the internodes are very long and the flowers very large with a corolla-tube longer than the calyx.

E. Tatarica Fisch. is usually a robust plant with an erect, simple or little-branched stem, foliage very hairy and capsules much longer and narrower than those with which we are familiar, truncate and not emarginate.

E. tenuis Brenner resembles a small and slender form of *E. brevipila*, and possesses remote stem-leaves with blunt teeth, long internodes and fewer flowers or fruits than that species. Its glandular hairs are similar but often more scanty.

As regards any future revision of the British Euphrasiae I am of opinion that a considerable reduction in the number of species would be justified. So far, we have only an imperfect knowledge of the distribution of many of the species, and an altogether inadequate idea of the ecological conditions under which any of them grow. Members would be rendering a great service to science generally, and to referees in particular, if they would add notes on the nature of the habitat—soil, underlying rocks, moisture, exposure, etc.—and a short list of the adjacent plants. Any mosses growing round the stems of the Euphrasiae would also afford valuable indications as to soil conditions, and could easily be dried with the species they accompany. Much work remains to be done in ascertaining the name of the host upon which the Euphrasia flourishes, and in investigating the function of the glandular hairs. Is their function that of protection, of attraction, or have they any physiological use? When we have obtained adequate data upon habitat conditions and the other points raised we shall be in a position to understand the reason for many of the very slight differences which now separate some of the species, and the work of revision will be greatly facilitated.

Finally, may I say that I have long deplored the unfortunate divorce between systematic and other branches of botanical study, and feel that we systematists are not " pulling our weight." Many of us are merely collectors—rather than investigators—and few of us are entirely free from obsessions. As Huxley long ago pointed out, unless we are prepared to study Nature with an open mind—free from preconceptions—we shall learn nothing.

NEWBRED PLANT SPECIES.

By E. Almquist, Stockholm.

In nature we frequently find new forms, hybrids or mutants, but new forms, with power to spread, are rare: I mean forms bred in the country and not imported. I have made observations on Swedish hybrids and I have grouped most of them in five different classes. It is remarkable that in many genera, with numerous species, we scarcely know hybrids, *i.e.*, *Geranium*, *Lamium*, *Campanula*, *Orobus*, *Prunus*, *Trifolium*, *Melampyrum*, *Plantago*, *Saxifraga*, *Chenopodium*, *Arabis*, *Capsella*, *Silene*, *Allium*, *Gagea*, etc.

The causes are, of course, very different and in many cases have not been investigated.

1. Imported species frequently produce hybrids, *i.e.*, *Galium Mollugo*, *Medicago sativa*, *Thymus Chamaedrys*, *Tragopogon porrifolius*, *Papaver Rhoeas*, *Senecio viscosus*, *Potentilla recta*, *Linaria repens*, *Centaurea nigra*, *Lolium temulentum*, etc.

2. Swedish species, with different habitat, cross accidentally by meeting, *i.e.*, *Geum rivale* × *urbanum*, *Lychnis dioica* × *alba*, *Valeriana officinalis* × *excelsa*, *Mentha aquatica* × *arvensis*, *Calamagrostis silvatica* × *epigeios*, etc.

3. The hybrids of water plants are strikingly common, *i.e.*, *Potamogeton*, *Sparganium*, *Batrachium*, *Epilobium*, *Rumex*, *Radicula*, *Veronica*, *Carex*, etc.

4. Several trees are constant in most of our countries, but in some provinces, where they meet new species, they cross, *i.e.*, *Quercus Robur* × *sessiliflora*, *Tilia parvifolia* × *platyphylla*, *Ulmus montanus* × *campestris*, etc.

5. In some genera the hybrids prevail, in some they cross and segregate continually, *i.e.*, *Salix*, *Rubus* and *Rosa*.

A great many other genera also breed hybrids, *i.e.*, *Cirsium* and *Poa*. Nevertheless in our day the results both from crossing and mutation are very poor. New constant species are rare. It seems that nature at present is standing rather still. I have made a list of newbred, fertile, Swedish species, that partly seem to have reached constancy, but the list is poor :—*Lychnis dioica* × *alba*, *Galium Mollugo* × *verum*, *Geum intermedium*, *Valeriana baltica*, *Plantago major rosea* f., *Verbascum nigrum gymnandrum*. De Vries did not reach much further. If we exclude the forms of *Oenothera* his list includes *Capsella Heegeri* (Lindau), *Lychnis vespertina glabra* (Hilversum), *Ranunculus arvensis inermis*, *Fagus silvatica aspleniifolia* (Lippe Detmold) (Mutat. Theorie I.S. 476). Gerbauld discovered in Sarthe the constant *Viola eburnea*. These examples prove the insignificant movement.

If the habitat changes, the vegetation also must change. Small variations in the milieu we often meet, and observers discover on the spot plants imported from the neighbourhood, some hybrids, etc. But greater revolutions and the small changes continued for centuries we are not able to follow. In our days the flora is rather immutable. The import of higher plants and of small parasites from other countries is of course often striking, but most of the imported forms that spread quickly disappear. The former vegetation is not much altered by them. For studies of the species spreading I would like very much to recommend to the reader the very important work of Iltis on G. F. Mendel (Berlin, 1924). It exposes a splendid biological tragedy—the struggle between the discoverer and the ruling schools, between facts and doctrines. No one cared about the solitary man. He finished his investigations and science has suffered immensely from his loss.

A NOTE ON NOMENCLATURE.

By G. Claridge Druce.

A word or two may be given on this thorny subject. By some young botanists Linnaeus is thought to have invented botany, and that it began with him, but it is trusted that the succeeding pages will correct that impression. He did not even invent the binomial system, but he had the high merit of being the first botanist to consistently apply it. Previously a plant had one, two, or more words to designate it as *Buxus*, the Box, or *Aquifolium*, the Holly, used by Gerard. Bauhin designated the Privet *Ligustrum*. Parkinson called the Ash *Fraxinus vulgaris*, and Bauhin called it *F. elatior*, the latter being adopted by Linnaeus. Bauhin called the Daisy *Bellis sylvestris minor*, which Linnaeus altered to the binomial *B. perennis*, as contrasted with another annual species which he shortened from the lengthy *Bellis minime pratensis caule folioso* of Boccone to *B. annua*, although he might have taken Dodoens' name of *B. sylvestris* for the English perennial Daisy. Ray used *Cerasus sylvestris septentrionalis fructu parvo serotina* for the Bird Cherry which Linnaeus condensed to *Prunus Padus*. The plan now adopted by all botanists is to use a binomial such as *Bellis perennis* L., the letter at the end signifying Linnaeus. The method of abbreviating authors' names is to take the first syllable and the first letter of the next syllable if a consonant, *e.g.*, Gren. & Godr. are the abbreviations respectively of Grenier and Godron, the authors of *Flore de*

France. In the cases of a few well-known botanists, such as Linnaeus, the single letter L. is enough. De Candolle is usually written DC. In all cases the generic name is written with a capital letter, the specific name with a small letter, *e.g.*, *Viola odorata* L., but there are exceptions with regard to the species names. These are written with a capital (1) if it is an old generic name or an old appellative, as *Hieracium Pilosella* L., which was the *Pilosella major* of Camerarius; *Hypericum Androsaemum* L., which was the *Androsaemum* of Dodoens; *Croton Cascarilla* L., the latter being an old medicinal name, and *Sterculia Balanghas* L., the specific being a vernacular name; (2) when the specific name is derived from a person, *i.e.*, *Lepidium Smithii* Hook., named after Sir J. E. Smith by Sir W. Hooker; *Orchis Fuchsii*, named after Fuchs, in whose *Historia Stirpium* of 1542 it is figured. (A modern tendency is to use one *i* only in such names.) If a botanist has not accurately named a plant, the specific name is written adjectivally with a capital, as *Salix Smithiana* Willdenow, so named because Smith (*Fl. Brit.* iii., 1070) recorded *S. mollissima* Ehrh. by error from Bury, the plant being really a hybrid which Willdenow then named *S. Smithiana*. Some botanists write names of the latter class with a small letter, and there are others who use no capital letters for specific names—an easier method for people with short memories, but which ignores much of the historic charm of botany. Formerly plants with names derived from places were written with a capital, and that seems common sense, but the modern practice adopted from continental practice, where adjectives derived from proper nouns are written with small letters, not capitals, is to ignore it, as *Tilia europaea*, not *T. Europaea*; also specific names ending in "*oides*" were written with a capital, *e.g.*, *Picris Hieracioides*, and *P. Echioides*. Linnaeus, in the majority of instances, followed that plan, but he was by no means consistent, for we find that a species written with a capital in one edition has a small letter in the next, and vice versa. On the whole it seems wiser to keep to one plan and to write them all with a capital. It makes less ridiculous such names as *Cerastium Cerastioides*. So, too, at one time, when an adjective or a name in the genitive case was used specifically it was written with a capital as *Rosa Sepium*, *Vicia Sepium*, and *V. Dumetorum*. Now, it is more usual to write these and similar names with a small letter. The specific name must agree with the generic name, *e.g.*, *Hyoscyamus niger*, *Solanum nigrum*, and *Populus nigra*. Varieties must follow the same rule. The law that governs botanic citation is the "Law of Priority" of publication. The first author who correctly describes a genus, species, or variety, is entitled to have his name appended as the author. If, however, he describes a species under a wrong genus, or a variety under a wrong species, he loses the right, and the author who puts the plant in the proper genus is to be cited, *e.g.*, Linnaeus described a genus of grasses under the name *Aira*, one of its species being *praecox*. It is therefore correct to write *Aira praecox* L. He, however, also put in this genus a common British species which he called *Aira caespitosa*, and so long as it is kept in that genus it must be so cited. Palisot de Beauvois showed that it was generically distinct, and gave the name *Deschampsia* to the restricted genus; therefore it must be written *Deschampsia caespitosa* Beauv., not *D. caespitosa* L., because Linnaeus was not aware of the later genus. Certain botanists, however, write *D. caespitosa* (L.) Beauv., which has the advantage of showing that Linnaeus gave it the first trivial name, and that Beauvois is the author of the present binomial. The disadvantage of the method is that it takes space in citation. So, too, with varieties; if a plant is named by one author as a variety, *e.g.*, *Evonymus europaeus* L., var. *latifolius* L., and another author correctly thinks it deserves specific rank, that author has to be cited for it. Therefore we do not write *Evonymus latifolius* L., but *E. latifolius* Miller, for the author of the Gardeners' Dictionary in 1768 raised it to a species. Again some authors write *E. latifolius* (L.) Mill. to show that a preceding botanist was the founder of the trivial. If an author has described as a species a plant which a subsequent botanist considers to be only of varietal value the latter author is to be cited, *e.g.*, *Poa angustifolia* L. has been considered to be only a narrow-leaved variety of *P. pratensis* L. It is therefore written *P. pratensis* (L.), var. *angustifolia* Gaudin, assuming that Gaudin was the first author to reduce it to its proper status. This instance is complicated by another difficulty. In the "Species Plantarum" *P. angustifolia* comes before *P. pratensis* and has what the American School of Botanists term "priority of place." Therefore Richter (*Pl. Europ.* 87) writes *P. angustifolia* L., var. *pratensis* (L.) when the authority is Richter.

Hundreds of mistakes from not following these rules are to be found in a recent work on British Plants.

A proper system of Nomenclature must have a definite starting point. For many years this date was fixed by a Congress of Botanists presided over by De Candolle at Paris, in which the date of 1737 was fixed, that being the date of the publication of Linnaeus' "Genera Plantarum." This date, however, allowed many works which had not followed the Linnean methods to be available for citation of genera and Kuntze (*Rev. Gen. Pl.*) showed that the date was arbitrary, and should have been taken from the first published work of Linnaeus, the "Systema" of 1735. Taking that date over 10,000 plant names might be changed. The writer (*Pharm. Journ.* 1892) showed that the starting point should be neither of these dates, but that the starting point of citation should be the first edition of the "Species Plantarum" of 1753, when the combination of both genera and species, under a binomial, was for the first time in Botanical History consistently applied, and therefore was the logical and correct date to adopt. This was also independently urged by Professor Ascherson and, after much discussion, was eventually carried nearly unanimously at the Vienna Congress in 1906. Unfortunately at that Congress, which was dominated by Engler, the German botanist, who was perhaps influenced by the prospect of changes that might have to be made in his published works, induced the botanists present to accept a list of names, Nomina Conservanda, which were to be retained notwithstanding they did not comply with the Law they had just framed. The eminent authority, A. von Kerner, urged on the contrary "that it seems highly impolitic to admit the possibility of exceptions to the application of the principle. If the possibility of such exceptions is once allowed, individuals will almost certainly consider themselves justified in increasing the number of the exceptions. On the other hand, such a list of genera is unnecessary for the reason that the number of necessary changes of name is considerably reduced by fixing the year 1753 as the starting point. Finally, one should not shrink from changing a name which has become untenable through the principle of priority, because it only requires the intelligent co-operation of all experts, especially of the compilers of text-books and descriptive botanical works, to make the new ones at once current, at least with the younger men who take part in the building up of the science in the next few decades." This reasonable suggestion, however, fell upon deaf ears, and the Brussels Congress, at which the German school was in the majority, did nothing to rectify the injustice and illogicality of its previous action. Fortunately there are not many generic names in the British Floras which are affected by this Viennese innovation. Yet the application of the Viennese rules, modified as they are, is not fully followed out in our text-books. For example, some botanists still write *Rubus suberectus* And., which is most clearly and unmistakably antedated by *Rubus nessensis* Hall. The author of the later date only (but unjustifiably) changed the name because this Bramble had been found elsewhere than by Loch Ness, a reason which might induce other people to change *Cornus suecica* because the plant is not limited to Sweden. It must be understood that the earliest trivial applies to a species despite its transference to other genera. Here again, at Vienna, exceptions were made; that is, if there were already an existing binomial in the genus, the earlier trivial of the same name could not be applied, *e.g.*, a grass originally named *Aira splendens* was found to be a *Koeleria*. Yet one cannot (by the rules) write *K. splendens* because in the meantime Presl had given that name to a Sicilian grass, nor can here be a duplication of the specific name, *e.g.*, one must not write *Glaucium Glaucium* (L.), although the yellow poppy is a *Glaucium*, and was originally described as *Chelidonium Glaucium* by Linnaeus, and the earliest trivial is therefore *Glaucium* The ornithologists have no such rule, and write *Turdus Turdus* and no one seems any the worse. It has great advantages and we adopt it.

Another extraordinary inconsistency in the Vienna rules is that, while the trivial is to be retained when transferred as a species from one *genus* to another, it does not insist that it should be retained when the *grade* is changed. We must, according to the Rules, write *Sinapis alba* L. and *Brassica alba* Boiss. when we transfer it, but if someone considered *Brassica alba* to be a *variety* of another species he might write var. *nigra*, *purpurea*, or whatever name might please him. Again, if the grade were lowered to a sub-var (whatever that is) it might be sub-var. *violacea*, or if a forma—forma *viridis*, or a lusus—lusus *alba*. As nothing is more varied than the opinions botanists have of grades it follows that there is here the source of endless confusion, since one botanist lumps many species under one, another splits one into many. It has until recently been held improper to change the spelling of the original trivial. Linnaeus wrote *Arenaria trinervia*, Smith wrongly altered it to *A. trinervis*. It was invalid. In many instances the Latinised name does not well represent the vernacular, for instance, Linnaeus wrote *Bartsia*, intending to commemorate Johann Bartsch. Now it is (by the German school chiefly) written *Bartschia*. This practice seems objectionable, especially when the initial letter itself is changed. Linnaeus, in error, wrote *Prunella*, a genus previously written *Brunella* by Tournefort. Now the older spelling is restored by some botanists, but the alteration is very confusing and without compensating advantage. It is well to avoid making a man say what he has not said and in writing *Brunella* L. or *Bartschia* L. one is making an incorrect citation. Smith wrote *Goodenia* to commemorate Goodenough. Are we to change it to *Goodenoughia* Sm.?

In Britain the standard for Genera until recently has been the monumental "Genera Plantarum" by Bentham and Hooker, and this is still followed by the majority of British writers. Unfortunately there seems to be, on the part of younger botanists, a tendency to adopt the German system of Engler in the "Pflanzenreich." Bentham and Hooker's work begins with the Ranunculaceae and ends with the Grasses, in Engler's work the Grasses come first and it ends with Compositae. For Bentham and Hooker's *Genera* Durand has issued a valuable and useful *Index*, in which there are some modifications, especially in the genera of the Grasses, and a similar excellently compiled work has been prepared by Dalla Torre, the "Genera Siphonogamarum," which adopts the sequence of Engler. New views of generic or specific values will always involve changes in the nomenclature, and quite inavoidably so, but a great safeguard is retained by making permanent the earliest trivial under whatever grade a plant may be placed from time to time.

The multiplication of small genera is to be deprecated on account of the confusion that arises and the name-changing it involves. All the practical advantages could be retained by making them sections, *e.g.*, *Scirpus* with sections *Eleocharis*, *Schoenoplectus*, *Fimbristylis*, *Eleogiton*, *Holoschoenus*, *Blysmus*, and *Scirpus* proper.

THE NOMENCLATURE AND ORTHOGRAPHY OF THE LONDON CATALOGUE, Ed. 11.

By T. A. Sprague, B.Sc., F.L.S.

The London Catalogue has hitherto been regarded as an authoritative list of the names of the higher British plants. The nomenclature of the tenth edition, for which the late W. A. Clarke and the late E. S. Marshall were jointly responsible, was worked out "with the view of a strict compliance" with the International Rules of Nomenclature, and this object was very largely attained, although naturally a few errors crept in owing to misinterpretation of some of the Rules. Reference to Marshall's "Notes on the London Catalogue, ed. 10" (Journ. Bot. 1908, pp. 281-289, 313-319) shows how very carefully the work was done.

Unfortunately those ultimately responsible for the eleventh edition do not appear to have paid adequate attention to nomenclature, for the work contains numerous nomenclatural errors and orthographic blemishes which might have been rectified had it been submitted to an expert before publication. From internal evidence it would appear as though the Editors, instead of attempting to determine the correct name of each genus and species according to the Rules, had taken a few recent works such as the seventh edition of Bentham and Hooker's Handbook of the British Flora and the tenth edition of Babington's Manual of British Botany, and collated them with the tenth edition of the Catalogue, and in cases where different names were adopted in the various works consulted had chosen the name which was most familiar to them. Such a method is bound to prove unsatisfactory for the simple reason that neither the seventh edition of the Handbook nor the tenth edition of the Manual was in strict accordance with the Rules. The name *Erythraea* is a case in point. It was retained in the Handbook presumably with the desire of avoiding name-change in a book of a popular character—in the prefatory note to ed. 7, it was not stated that the nomenclature had been brought into strict accordance with the International Rules, but merely that it was more in accord with modern views. *Erythraea* was retained in the Manual because Mr Wilmott, as he expressly stated in the preface, ignored generic names whose authors did not employ the binomial system, although such names are recognised under the Rules. The International name of the genus is of course *Centaurium*, as given in the tenth edition of the Catalogue. *Erythraea* was proposed for conservation by Janchen in 1909, but was rejected by the Brussels Congress. *Centaurium* is nevertheless replaced by *Erythraea* in the eleventh edition of the London Catalogue.

Those who realise that the advancement of botany is seriously retarded by want of uniformity in nomenclature cannot but deplore the presence of such breaches of the International Rules in a standard work, whether these breaches are inadvertent or deliberate. The only eventuality in which departure from the strict letter of the Rules appears to be justifiable is where new facts come to light in the interval between two successive International Botanical Congresses, entailing the displacement of a well-known generic name by an earlier little-known one. It was with the express object of avoiding such disadvantageous name-changes that a list of "nomina generica conservanda" was authorised by Art. 20 of the Rules. Hence to reject, as Fernald has done, an old-established name such as *Nuphar* (late 1808 or early 1809) in favour of *Nymphozanthus* (May 1808) *before** it has been decided whether *Nuphar* is to be conserved or not, is to follow the strict letter of the Rules while ignoring their spirit. If the next International Congress decides to conserve *Nuphar*, the 19 new combinations recently made under *Nymphozanthus* by Fernald in 1919 will become superfluous, just as the new combinations under *Psedera* made between 1905 and 1910 became superfluous through the conservation of *Parthenocissus* in the latter year, and the creation of such new combinations is therefore directly contrary to Art. 4, which enjoins "the avoidance of all useless creation of names."

Apart from this eventuality, strict observance of the Rules is incumbent on all who have the progress of botany at heart. "For many years prior to the Vienna Congress tremendous effort was

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*It is true that the name *Nuphar* was struck off the list of new nomina conservanda adopted at Brussels, but this was because it was anticipated that the name could be retained under the unaltered operation of the International Rules. A new situation has since arisen owing to the discovery that *Nuphar* is antedated by *Nymphozanthus*.

expended by those who sincerely wished to bring uniformity out of the very diverse usages of local groups of botanists. The effective foundation work laid at Paris was subsequently carried forward with unlimited self sacrifice and far-seeing skill by Briquet, Flahault, Rendle and others;" and international agreement on nomenclature was at length attained at Vienna owing to " the sportsmanlike or statesmanlike spirit with which the vast majority of delegates, representing all sorts of pet views abandoned their private wishes " (Fernald in Journ. Bot. 1921, 234).

If it becomes a usual thing for botanists of repute to follow the Rules only in so far as the latter reflect their own personal views, the results obtained at Vienna will have been thrown away, and nomenclature may relapse into its former chaotic condition. It may be hoped that the example set by the Editors of the eleventh edition of the London Catalogue will not be followed.

The following notes are arranged according to the running numbers of the families, genera and species in the Catalogue, and are in two series, the first dealing with nomenclature, the second with orthography. Synonyms and erroneous identifications are printed in italics, and the correct names in small capitals. Only a few examples are given, no attempt having been made to detect all the mistakes in nomenclature. Many others will doubtless come to light when the list is scrutinised species by species.

I.—NOMENCLATURE.

12 *Adonis autumnalis* L. : A. ANNUA L.—*vide* Journ. Bot. 1907, 99; International Rules, Art. 44.

NUPHAR Sm. 18.—Antedated by *Nymphozanthus* Rich., as pointed out by Fernald (Rhodora, 1919, xxi. 183). The retention of *Nuphar* in the Catalogue is, however, justifiable for the reasons given on p. 926.

NASTURTIUM R.Br. 29.—The retention of *Nasturtium* seems justified (*vide* Journ. Bot. 1924, 225-8). The question hinges on the interpretation of Art. 20.

90 *Nasturtium palustre* DC. : N. ISLANDICUM (Oeder), comb. nov.—Schinz & Thellung have shown that *Sisymbrium islandicum* Oeder (1768) is the earliest binary name for this species, and call it

Roripa islandica (Vierteljahrsschr. Nat. Ges. Zürich, liii. 538, 1909).

129 *Sisymbrium pannonicum* Jacq. : S. ALTISSIMUM L.—*vide* Schulz in Engl. Pflanzenr. Crucif.-Sisymbr. 116 (1924).

130 *Sisymbrium Columnae* Jacq. : S. ORIENTALE L.—*vide* Schulz, l.c. 122.

135 *Erysimum orientale* Mill. E. ORIENTALE Crantz.—As pointed out in Journ. Bot. 1925, 183, *Erysimum orientale* Mill. is *Barbarea Barbareae* (L.) Sprague (*B. plantaginea* DC.).

223 *Silene Cucubalus* Wibel : S. ANGUSTIFOLIA (Mill.) Guss.—*Vide* Briquet, Prodr. Fl. Corse, i. 543 (1910); Rendle in Journ. Bot. 1911, 277. Schinz and Thellung contend that *Cucubalus angustifolius* Mill. is a "nomen abortivum," and hence call the species *Silene vulgaris* (Moench) Garcke, but their conception of "nomina abortiva" is not accepted by most other botanists.

258 *Sagina Linnaei* Presl : S. SAGINOIDES (L.) Dalla Torre.—*Vide* Journ. Bot. 1907, 100.

Anthriscus Bernh. 168 : CHAEREFOLIUM Haller.—*vide* Schinz et Thellung in Vierteljahrsschr. Nat. Ges. Zürich, liii. 552 (1909). Janchen in 1909 proposed that the name *Anthriscus* should be conserved (Rec. Doc. Congr. Bot. Brux. 54: 1910), but it was struck off the list of new "nomina conservanda" by a committee composed of Briquet, Engler, Harms, Prain, Rendle, Schinz and Stapf, and this decision was confirmed by the Brussels Congress (Act. Congr. Bot. Brux. 1910, i. 80-83: 1912). Personally I consider that this decision was unfortunate, but it should be obvious that the list of nomina conservanda would soon cease to carry weight if a name definitely rejected at one Congress were conserved at a succeeding Congress, unless *new facts* bearing on the question had come to light in the meantime.

Silaus Bernh. 175 : SILAUM Mill.—*vide* Druce in Rep. Bot. Exch. Cl. Brit. Isles 1913, iii. 435; Schinz et Thellung in Vierteljahrsschr. Nat. Ges. Zürich, lx. 359 (1915).

829 *Silaus flavescens* Bernh. : SILAUM SILAUS (L.) Schinz et Thell.—*vide* Schinz et Thell. l.c.

921 *Inula squarrosa* Bernh. : INULA SQUARROSA (L.) Schinz et Thell.—*vide* Journ. Bot. 1924, 46.

Petasites Hill 225: PETASITES Mill.—*vide* Druce in Rep. Bot. Exch. Cl. Brit. Isles, 1913, iii. 434. Various other generic names, e.g., *Fagopyrum*, *Alnus* and *Castanea* should be attributed to Miller instead of Hill.

952 *Petasites ovatus* Hill: P. HYBRIDUS (L.) Gaertn. Mey. et Schreb.—*vide* Journ. Bot. 1907, 439.

Cnicus L. 231: CIRSIUM Adans.—The Editors seem to have overlooked the fact that *Cnicus* L. emend. Gaertn. is included in the list of "nomina conservanda," *Carbenia* Adans. being cited as a "nomen rejiciendum," i.e., the name *Cnicus* is conserved for *C. benedictus*. Consequently, as explained in International Rules, ed. 2, 103, footnote, the name *Cirsium* should be used for the genus commonly called *Cnicus* in British floras.

1274 *Taraxacum vulgare* Schrank: T. OFFICINALE Weber.—*vide* Act. Congr. Bot. Brux. 1910, i. 52 (1912), where it is clearly demonstrated that *T. officinale* is the correct name for the species.

Azalea L. 263: LOISELEURIA Desv.—*Loiseleuria* is a "nomen conservandum" and, as such, should of course be retained. The fact that *Azalea* L. is not cited as a "nomen rejiciendum" is immaterial. The crux of the whole matter is: with what species was the conserved name *Loiseleuria* associated? This was of course *Azalea procumbens* L., and the conservation of *Loiseleuria* therefore precludes the use of the name *Azalea* for the monotypic genus based on that species. In 1907 there was some misconception on this point, but there should be none nowadays. The case is dealt with by Schinz and Thellung in Vierteljahrsschr. Nat. Ges. Zürich, liii. 582 (1909).

Armeria Willd. 271: STATICE L.—*vide* Journ. Bot. 1924, 267. It is now too late to conserve *Armeria*. *Armeria* was proposed for conservation in 1909 by Janchen (Rec. Doc. Congr. Bot. Brux. 1910, 54) but was definitely rejected at the Brussels Congress. The reason given for rejecting *Armeria* in 1910 was that the change to *Statice* under the International Rules had already been made by British and Swiss botanists, and that it was too late to reverse it (Act. Congr. Bot. Brux. 1910, i. 83). Obviously this argument has become even more cogent by the lapse of another fifteen years.

Erythraea Neck. 286: CENTAURIUM Hill.—The case of *Erythraea* is similar to that of *Armeria*. *Erythraea* was proposed for conservation in 1909 by Janchen, but rejected by the Brussels Congress. The decisions as to new "nomina conservanda" then reached were the result of a compromise between two schools of thought, and should not be upset (Act. Congr. Bot. Brux. 1910, i. 83).

1405 *Myosotis palustris* Hill.: M. SCORPIOIDES L. em. Hill.—*vide* Journ. Bot. 1907, 440: Vierteljahrsschr. Nat. Ges. Zürich, liii. 585.

Cladium P.Br. 474: MARISCUS Zinn.—*vide* Fernald in Rhodora 1923, xxv. 49.

2015 *Cladium Mariscus* R.Br.: MARISCUS SERRATUS Gilib.—*vide* Fernald, *l.c.*, 51.

2131 *Calamagrostis lanceolata* Roth: C. CANESCENS (Weber) Gmel.—*vide* Journ. Bot. 1924, 43. Schinz and Thellung consider that *Arundo canescens* Weber (1780) is a "nomen abortivum" because they do not appreciate the difference between taxonomic and nomenclatural validity, (*vide* Rehder in Journ. Arn. Arb. i. 45: Journ. Bot. 1921, 290). Weber considered that *A. canescens* was specifically distinct from *A. Calamagrostis*. Under Art. 27 two species of the same genus cannot bear the same specific name, so that Weber was perfectly justified under the Rules, in giving a new name to his species. Had he recognised two distinct species and called them both *Arundo Calamagrostis*, he *would* have been breaking the Rules. The *species*, *Arundo canescens*, is now considered taxonomically invalid, but the *name*, *Arundo canescens*, was nevertheless given in accordance with the Rules, that is to say, it is nomenclaturally valid, and can therefore be made the basis of the combination *Calamagrostis canescens* (Weber) Gmel.

Pteris L. 530: EUPTERIS Newman.—*vide* Schinz et Thell. in Vierteljahrsschr. Nat. Ges. Zürich, lxi. 415 (1916). "The name *Pteris* is usually applied to a world-wide assemblage of perhaps 150 pteridoid species having a single indusium, and the name *Pteridium* to the segregate genus of a few species with double indusia, with *P. aquilinum* as type" (Maxon in Journ. Bot. 1923, 8). But Schinz and Thellung, l.c., have shown that *Pteridium* Scop. is a "nomen abortivum." Scopoli did *not* (as stated by Maxon l.c. 9) segregate *P. aquilina* as a new genus *Pteridium*: what he did was to *replace* the name *Pteris* L. by *Pteridium* Gled., thus contravening Art. 51, 1°. That Scopoli did not retain any part of *Pteris* L. under that name is evident from the fact that he adopted *Pteris* Gled. for a genus including *Polypodium Filix-mas* L. and *P. Lonchitis* L.

II. ORTHOGRAPHY.

32 *Ranunculus acris*: R. ACER. Any Latin grammar will give the nom. masc. of the adjective as "acer." The fact that a masculine form "acris" is once recorded from Ennius is hardly sufficient justification for retaining the mirth-arousing combination *Ranunculus acris*.

55 *Berberis aquifolium*: B. AQUIFOLIUM. The trivial takes a capital because it is an old generic name (Rec. X.).

434 *Onobrychis viciaefolia*: O. VICIIFOLIA.—*vide* International Rules, Rec. XIII. This Recommendation is disregarded in numerous other instances, e.g., Nos. 1348, 1456, 2192, 2304.

693, 694 *Cotoneaster integerrima* and *microphylla*: C. INTEGERRIMUS and MICROPHYLLUS.—*Cotoneaster* should be masculine, like *Oleaster*.

811 *Chaerophyllum temulum*: C. TEMULENTUM.—*vide* Journ. Bot. 1921, 159. There is no Latin word "temulus." Linné obviously meant to write *C. temulentum* (cf. *Lolium temulentum*) and he corrected the spelling in Flora Suecica, ed. 2, 94 (1755), although he omitted to do so in Sp. Pl. ed. 2.

901 *Aster Novi-Belgii*: A. NOVI-BELGII.—*vide* International Rules, Rec. X., where this very name is given as one of the examples.

904, 905 *Erigeron canadense* and *acre*: E. CANADENSIS and ACER. The generic name is of course masculine. The Catalogue is not even consistent, the third species being "*borealis*," instead of "*boreale*."

923 *Inula britannica*: I. BRITANNICA. The trivial name does not mean "British," but refers to the celebrated herb "Britannica:" *βρεταννικὴ* Diosc. (Lib. IV. cap. ii.; Sprengel's Dioscorides, i. 505; Wellmann's Dioscorides, ii. 169); *Britannica* Pliny (Hist. Nat. ed. Harduin. ii. 361, l. 28; 375, l. 12); Anguillara, Semplici 247 (1561); Corda, Annot. 61, verso (1561); Gesn. Hort. Germ. ed. Corda 254, verso. The Herb "Britannica" was identified with several species belonging to different genera and families.

Linné used the name as a trivial also for a North American species, *Rumex Britannica*, which had been erroneously identified as the "Britannica" of antiquity (Amoen. Acad. i. 416; Sp. Pl. 334).

1272, 1273 *Leontodon hispidum* and *autumnale*: L. HISPIDUS and AUTUMNALIS. The generic name is masculine, not neuter, the basic word being ὁ ὀδών.

1288, 1289, 1290 *Tragopogon pratense*, *minus* and *porrifolium*: T. PRATENSIS, MINOR and PORRIFOLIUS. The generic name is masculine, the basic word being ὁ πώγων.

1310 *Oxycoccus quadripetala*: O. QUADRIPETALUS. *Oxycoccus* should be masculine, the basic word being ὁ κόκκος, but it is in any case desirable that the variety should agree in gender with its species (Rec. XV.).

1710 *Euphorbia coralloides*: E. CORALLIOIDES.—As the trivial was formed from κοράλλιον, the spelling "corallioides" given by Linné is correct.

1744 *Quercus ilex*: Q. ILEX.—The trivial, being the name of the genus to which *Q. Ilex* was formerly referred, takes a capital initial (Rec. X.).

1745 *Quercus cerris*: Q. CERRIS.—The trivial was a former generic name (Lobel, Ic. ii. 156), and therefore commences with a capital.

1828 *Cypripedium calceolus*: C. CALCEOLUS.—The species was referred by pre-Linnean writers to the genus *Calceolus*, hence the capital initial letter.

Amaranthus 356: AMARANTUS.—There seems to be little doubt that the name was derived from ἀ—not, and μάραντος—fading, and that the spelling *Amaranthus* is corrupt. Briquet (Prodr. Fl. Corse, i. 470), however, considers that the Linnean spelling *Amaranthus* should be retained. Until a definite ruling can be obtained from a judicial committee both spellings will doubtless continue in use.

TAMUS 426.—Linné adopted *Tamnus* from Tournefort (Inst. t. 28), and at first retained the correct classical spelling (Syst. ed. 1; Virid. Cliff.), but changed it to *Tamus* in 1737 (Gen. Pl. ed. i. 305), citing *Tamnus* Tourn. as a synonym. The case of *Tamnus* is on a different footing from that of *Amarantus*: since Linné *deliberately* altered the spelling, *Tamus* cannot be treated as a typographic or orthographic error (Art. 57), but is a new and arbitrarily com-

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Aubrey Baring
Esmond Baring
W.C Barton
E. Bedford
Rev. F Bennett
S H. Bickham
E. B Bishop
J Bates Blow
F W Branson
Dr. Robert Bridges
Miss Ruth Bright
C E Britton
G C. Brown
Mrs John Buchan
Rev. Prebendary R J Burton
The Countess Buxton
The Countess of Carlisle
Mrs Cadbury
Miss Diana Cator
Miss Hilda Chamberlain
W Norwood Cheesman
Fred Clarke
Sir J Colman
Mrs Colville
J Comber
Mr & Mrs R H Corstorphine
Reginald Cory
Miss A Cottes
Professor W Craib
R S Creed
Rev E C Cruttwell
J Cryer
L Cumming
Sir Roger Curtis
H W Dalby
W Davidson
Miss Aileen David
Lady Davy
Mrs Debenham
Mrs Dent
J.H. Dixon
Lady Dowie
H Downes
Dr. Eric Drabble
F Druce
Mrs Drummond
Miss M Drummond
H H Prince F Duleep Singh
W D'Urban
Miss Dorothy Egerton
The Lady Elphinstone
A H Evans
Mrs F Ewing
J Meade Falkner
E H Farr
Lord & Lady Dartmouth

Mrs Fleming
R H. Flintoff
T J. Foggitt
The Countess Fortescue
Rev Prebendary H E. Fox
Sir T. Mansel Franklen
J Fraser
Miss Fry
T R Gambier-Parry
Professor R Ruggles Gates
Miss Gibbings
Hon Mrs Maud Glyn
H J Goddard
Mrs Godden
Colonel M J Godfery
Captain W Balfour Gourlay
Mrs Graham
A W Graveson
Dr Henry Gray
W G Greenwood
Mrs Gregory
R Grierson
Miss Maud Grenfell
Viscount & Viscountess Grey
Professor Griffiths
J E Griffith
C H Grinling
James Groves
Major R G Gwatkin
H F Guppy
Patrick M Hall
Mrs Macalister Hall
F J. Hanbury
The Viscountess Harcourt
In Memory of W A Harford
Rev G H Harris
Rev. H H Harvey
Miss Haynes
Miss I M Hayward
Hon F R Henley
Walter Hills
C E Hodgkin
Sir George & Lady Holford
D Lloyd Howard
C P Hurst
P R Hutchinson
B Daydon Jackson
The Countess of Jersey
E Marsden Jones
Colonel H H Johnston
Professor Sir F Keeble
Bolton King
Mrs Knowling
C C Lacaita
F F Laidlaw
Miss Landon
J H Leach
Hon Mrs Alex Leith
Lady Joan Legge
J E Little
J L Luddington
D Lumb
J F M McGill
Mrs Reginald McKenna
St John Marriott
Lady Evelyn Mason
Rev W Wright Mason
J Cosmo Melvill
The Countess of Mexborough
Miss Dorothy Meynell
R H Miller
J Fairweather Milne
Right Hon Sir Alfred Mond
The Misses Cobbe

Dr George Morgan
Miss A M. Neild
Mrs Newman
C. Nicholson
W. A Nicholson
W. E Nicholson
Mrs O'Callaghan
Major Robert Orme
Lady Osler
Dr. John Parkin
Donald Patton
Mrs H. Perrin
Professor J. Percival
Miss Elizabeth Post
Sir D Prain
Professor J H Priestley
F. Ransom
J F Rayner
Rev E M Reynolds
Alex F Roberts
Miss Lucy Richards
Right Rev Bishop Robertson
Miss Ida Roper
Lady Rose
The Lord Rothschild
Lady Victoria Russell
Sir E J Russell
F Rilstone
The Viscountess St Cyres
C E Salmon
Dr Dukinfield H Scott
C D Scott
W A Schoolbred
Professor J Small
R Snow
Professor W Somerville
Rev T Stephenson
J H Stephens
W H St Quintin
C B Tahourdin
Andrew Templeman
Sir Everard Im Thurn
Edgar Thurston
Mrs Thatcher
Mrs Thompson
Miss Agnes Thompson
Miss Todd
A W Trethewy
Miss Alice Trower
Miss C G Trower
Rev Francis Turrell
Mrs Dowie Urquhart
Miss Vachell
Dr Vines
Miss Vivian
H Walker
T J Watt
Miss Elsie Watchorn
Charles Waterfall
Lady Margaret Watney
Mrs Wedgwood
Professor F E Weiss
Alfred Webster
Major Bates Van de Weyer
William Van de Weyer
Walter J White
Miss Agatha Wilkinson
E B Wilkinson
Miss Lavender Williams
R H Williamson
A Wilson
Lieut Col A H Wolley Dod
Professor T W Woodhead
Mr Justice Talbot

posed name, and the Editors of the Catalogue are therefore justified in retaining it (Art. 24).

1941, 1942 *Triglochin palustre* and *maritimum*: T. PALUSTRIS and MARITIMA. The generic name is feminine, the basic word being ἡ γλωχίν.

Even the names of families are not given correctly in all cases: *Portulaceae*, *Dipsaceae* and *Hydrocharideae* should of course be *Portulacaceae*, *Dipsacaceae* and *Hydrocharidaceae* (or, better, *Hydrocharitaceae*) respectively, the forms given in the Catalogue being those appropriate to tribes, not families. *Thymeleaceae* should be *Thymelaeaceae*, the type genus being *Thymelaea*. As pointed out in Journ. Bot. 1922, 73, the correct name for the Holly family is *Ilicaceae*, not *Aquifoliaceae*.

PRESENTATION TO THE HON. SECRETARY, G. CLARIDGE DRUCE.

It had long been felt by the members that recognition should be made of Dr Druce's unwearied service to the Society during the past 23 years, in which period he had so largely increased its membership and had annually prepared the lengthy and valuable Reports. He was therefore approached but expressed his aversion to a large monetary subscription. It was then suggested that the presentation might consist of a book-plate, an idea which he cordially welcomed, and it was arranged that the Hon. Mrs H. Adeane and the Hon. Mrs Guy Baring should make an appeal to the members. There was at once a most warm and cordial response, the many letters received showing how highly Dr Druce's services were esteemed, and the only objection raised was that the subscription was to be limited in amount.

The well-known artist, Mr Emery Walker, was entrusted with the design. A replica is attached with a description, as well as the subscribers' names, which have been engrossed by Miss Tempest. It may be added that the list of members written to was incomplete and, of course, comprised no Institutions, so that many well-known names are, unfortunately, omitted.

The presentation took place on Friday, June 26, 1925, with the kind permission of Sir George and Lady Holford, at their palatial mansion, Dorchester House, Park Lane, which contains a wonderful collection of paintings, a unique set of Shakespearian folios, of rare and costly illuminated MSS., and other treasures. Sir George and Lady Holford entertained to luncheon a party which included the Duke of Argyll, the Earl and Countess Buxton, Viscount Grey of Fallodon, K.G., the Hon. Mrs H. Adeane, the Hon. Mrs Guy Baring, Mrs Lawrence Drummond, Mr R. Benson of Buckhurst, and Dr Druce. The presentation, which included the engraved plate and 4000 impressions, a framed address and coloured copies of Maw's Genus Crocus and Fryer's British Potamogetons, was made in the magnificent ballroom, where a large number of members were assembled who had come from many parts of Britain for the occasion. The acceptances, in addition to the names already mentioned, included members of the staff of the Royal Botanic Gardens and Herbarium at Kew (as representing the Director, Dr A. Hill, F.R.S.), Messrs D. Cotton, F. Alston, R. W. Butcher, and Noel Sandwith. There were also the Rev. F. S. Alston, Scrivelsby, Lincoln; Mr G. S. Allen, Chislehurst; the Right Hon. H. Baker; Mr E. G. Baker of Kew, the son of an old Secretary; Sir Thomas and Lady Butler of Bury Lodge, Hants; Mr F. W. Branson, F.I.C., of Leeds, a fellow apprentice of Dr Druce at Northampton; Mr T. Bates Blow of Welwyn, one of the oldest members; Sir Roger Curtis, Bt., of Lichfield; Lady Davy of Byfleet, Miss David of Llandaff, the Hon. Mrs Maurice Glyn, Miss Haynes; the Hon. F. R. Henley of Arkiston Castle, Cumberland; the Hon. Mrs Ivo Fiennes, Mr J. Fraser of Kew, Mrs H. Graham, Mrs Knowling; Mr J. E. Little, Hitchin; Mr and Mrs T. H. Leach, Northampton; Mr J. L. Luddington, Wallington Hall, Norfolk; the Countess of Mexborough; Mr F. Ransom, F.C.S., Herts; Lady Victoria and Miss Russell, Shere, Surrey; Miss I. M. Roper, F.L.S., Bristol; Lady Cynthia Slessor, Middleton Park, Oxon; Dr H. Dukinfield Scott, F.R.S., Hants; Mrs and Miss Stebbing, Essex; the Misses Trower, Stansteadbury, Herts; Mr C. E. Salmon, F.L.S., Reigate; Miss Vachell, Cardiff; Mrs Wedgwood; Mr and Mrs R. H. Williamson, Seascale;

Mr Emery Walker, Mr S. J. Warry-Stone, Mr E. Wilkinson; Prof. Dr T. W. Woodhead, Huddersfield; Mrs Walkett. Illness prevented the attendance of the Viscountess Grey of Fallodon. Sir Everard Im Thurn of East Lothian, the discoverer of Roraima, the oldest member, sent his hearty good wishes; Countess Fortescue of Castle Hill, Devon; Lady Margaret Watney of Cornbury Park; Mr and Mrs Corstorphine of Arbroath, Mr F. Allchin of Fowey were unable to attend, and absence from England prevented Sir James and Lady Douie, the Rev. F. Bennett, and others from being present. A telegram from the Earl and Countess of Dartmouth and Lady Joan Legge conveyed "Love from all at Patshull, with many regrets at not being present."

Viscount Grey, in making the presentation on behalf of the members, gave a most delightful speech, teeming with kindly expressions. Speaking of Dr Druce, he alluded to the very thorough knowledge of the British flora which he possessed, but he considered it even more wonderful that he had in a very high degree not only the power but the willingness to impart it to others. He had that particular charm and sympathy which had endeared him to a very large circle of friends throughout the British Isles who held him in the highest regard. It was a personal pleasure to hand over to one whom he had known for so many years and for whom he had a real affection this presentation from his friends and fellow botanists.

In response, Dr Druce said he supposed the stereotyped expression would be to say that it was the proudest moment of his life. On the contrary, he experienced a feeling of profound humility, since the very gracious and touching remarks of Lord Grey, whom he had known since his undergraduate days, made him feel how little he deserved such kindness. Beautiful as the Book-plate was (and he thanked Mr Emery Walker for giving it so much of his skill), it was enhanced by the fact that it was handed to him by such an eminent lover of nature as Lord Grey. He also thanked their kind hosts for allowing it to be given in such beautiful surroundings, not the least of a long succession of kindnesses he had received at their hands. To the two ladies (Mrs Adeane and Mrs Baring) who had so successfully organised the gift, he was a hopelessly insolvent debtor. To a Secretary such a widespread recognition of his endeavours to help his fellow-members was most stimulating and helpful. From his earliest years he had a keen interest in botany. "And Nature, the dear old nurse, took the child upon her knee . . . And whenever the way seemed long and his heart began to fail, she would sing a more wonderful song, or tell a more marvellous tale." And from those days onward the love had continued and grown. It had led him over a large part of the earth's surface, into very beautiful scenery, and had brought him into contact with a large circle of fellow workers, many of whom, he was delighted to see, were present that day. He reminded them that the Society was established in 1836, with Dr J. E. Gray of the British Museum as President, and that Mr H. C. Watson, the author of *Cybele Britannica* and of *Topographical Botany*, acted as Secretary. He was followed by Dr Boswell Syme, the author of the third and best edition of *English Botany*, then by Mr J. Gilbert Baker, F.R.S., of Kew, whose son he was glad to see present. Afterwards came Mr C. Bailey, M.Sc., whose enormous Herbarium was a princely gift to Manchester University. In 1902 he took over the management of the Society, then having thirty subscribing members. The membership had now increased to nearly six hundred, and the last yearly Report exceeded 400 pages. Botany, comprising as it did ninety per cent. of the world's organic matter, was necessarily an enormous subject, segregated into Physiology, Histology, Cytology, Ecology, Plant Paleontology and Pathology, Genetics, Agriculture, Horticulture, Taxonomy and Field Botany, the last, the Cinderella of the sister sciences, being the branch to which most of those present belonged. All these sections were represented in the Society, because each could learn from the other, and however segregated Botany might become its devotees were all bound by a silver chain of a mutual love for the flowers of the field, a desire to see them in their place of growth, to delineate their beauties, and to know their structure, their history and characters. In the pursuit of this knowledge, arduous though the search might be, there came a great reward, and one which left no bitter after-taste. One of their members, a Yorkshire botanist, "with knowledge at one entrance quite shut out," for he early lost his eyesight, had by educating his sense of touch, taste, and smell, been able to identify over 500 species of plants, and in doing so had given himself intense pleasure. Another member, only recently taken from them, notwithstanding that she was crippled with arthritis, from the narrow horizon a bath-chair afforded had been able to detect several additional plants to Hayling Island, and at the same time was able to divert to some extent her attention from the almost ceaseless suffering she endured.

During his term of office, Dr Druce said, something like 140,000 specimens had been distributed by the very capable editors of the Exchange Club section. These in the main were critical varieties of common species, as their members were fully alive to the responsibility entailed on them to preserve as far as possible and to hand down to others the flowers which bound all these diverse sections and individuals of varying tastes together by a common love.

Dr Dukinfield Scott, F.R.S., who paid a warm tribute to the long years of botanical work of Dr Druce, said that if Field Botany were the Cinderella, it would remain even if all the other sister branches disappeared. He moved a hearty vote of thanks to Sir George and Lady Holford for so kindly allowing them to meet in their magnificent house, which was carried by acclamation.

Sir George Holford, K.C.V.O., briefly replied, and said that anything he could do for Dr Druce, for whom he had so much respect, affection, and admiration, was a real pleasure. The meeting, which throughout was marked by much enthusiasm and cordiality, then terminated.

The names on the Address, a copy of which is here given, were engrossed by Miss Tempest. There are three misprints: " Sir D. Prian " should read " Sir David Prain, F.R.S.," for "Dr Dukenfield H. Scott " should be substituted " Dr Dukinfield H. Scott, F.R.S.," and " W. A. Schoolbred " should be " W. A. Shoolbred."

At the request of many members, an explanation of Mr Emery Walker's design is appended. The arms in the right-hand corner are those of the Pharmaceutical Society of Great Britain, of which for ten years Dr Druce acted as Examiner in Materia Medica and Dispensing. In the centre are the arms of Magdalen College, Oxford, to which he is affiliated, and the left-hand are arms of the Linnean Society. Below these (dexter) are the Arms of the University of St Andrews, of which he is Hon. LL.D., (sinister) the University of Oxford, of which he is M.A. by decree, and D.Sc. Below, in the centre is the Gateway of the Oxford Botanic Garden (designed by Inigo

Jones and erected in 1632). Of this Dr Druce is an Hon. Curator and has been Fielding Curator of the Herbarium since 1890. On the dexter side are the Arms of the Ashmolean Natural History Society of Oxfordshire, of which he has been an officer since 1880 and repeatedly President. On the sinister side is the Grand Lodge of England, of which he is Assistant Director of Ceremonies; he is also the Charity Representative and P.G. Warden of the Provincial Grand Lodge of Oxfordshire. Below the inscription in the centre is the emblem of the Botanical Society of London and represents the *Victoria Regia*, which was first described and exhibited at its meeting on September 7, 1837. " It was sent from New Amsterdam on May 11 of that year. The plant was therefore named by Mr R. H. Schomburgk, by permission of her Majesty, *Victoria Regia*, and the Society has adopted this plant as its emblem." The plant was discovered in the river Berbice on the first of January 1837. On the right-hand are the Arms of the Borough of Northampton, where Dr Druce was apprenticed, and in which town he prepared the Flora of that county. On the left-hand are the arms of the city of Oxford, of which he has been Sheriff and Mayor, and is an Alderman and Magistrate, having been for thirty years Chairman of the Committee of Public Health; of this county too he has published a Flora. The background is ornamented with the Loddon Pondweed, which he discovered there in 1893, and which Fryer named *Potamogeton Drucei;* the Orchid flower is that of *Orchis praetermissa*, which he described from plants found in Berkshire and Oxfordshire. The Oak leaves in the lower frame have reference to " Dru " the oak and Druids and Druce.

FROM JOHN O' GROATS TO LAND'S END.

By Lady DAVY.

It has been suggested to me that I should write a short account of my botanical wanderings this season. I left here with Mr Foggitt in his car on June 10 and went through Sussex, getting *Pyrus torminalis* near Heathfield, and then on to Pevensey, where, after some searching, we found *Crepis foetida*, which was particularly wanted by some of the party. It was only just coming out, but when seen like that it cannot be mistaken for any other plant, as it has drooping buds arranged in a loose umbel. The foetid smell was not very noticeable. We spent that night at Lewes where our party was augmented by Mr Butcher. The following day we motored to Crewkerne. We had not meant to go quite so far, but it was difficult to get rooms. The next day we drove to Dulverton for *Valeriana pyrenaica*, which was abundant and at its best. We then went on to Molland for *Lilium pyrenaicum*, which we found in hundreds looking perfectly beautiful in full flower hanging over from high grass roadside banks. Then on through Simonsbath to Lynmouth, where we got nice specimens of *Euphorbia hibernica* and *Quercus sessiliflora*, and after staying the night at Porlock we drove to the Cheddar Gorge where we saw *Dianthus caesuis* in nice condition, besides many other interesting plants. We drove on to Catcombe wood near Calne, where we got *Lonicera caprifolium*, but already in seed. We then parted and on June 19th I went to Yorks with Mrs Knowling and met Miss Vachell, and we all went to Thirsk. The following day we were joined by Miss Vivian and drove to a spot to look for *Cypripedium*, but it was not to be found. The next day we spent in Teesdale seeing many delightful things. We had hoped to find *Viola arenaria* in flower, but it was too late for it, and we only saw fruits. On the 30th, the same party met to go to Ireland. We crossed from Fishguard to Roslare, arriving at 5 a.m., and took train to Kenmare, where we arrived early enough to go for a walk, hoping to get something new to us. In this we were successful, as Mrs Knowling soon spotted a lovely specimen of *Sisyrinchium angustifolium*. It is the most lovely colour imaginable. Soon after finding it we got another beautiful plant, *Pinguicula grandiflora*.

It is impossible to describe what a fascinating thing this is, a totally different shape to the common butterwort, very big and a gorgeous deep purple colour with some white. The following day we hired a motor and drove to Derrynane, where we found plenty of *Simethis bicolor* in perfect flower in two places. We had a lovely drive again next day, going to Beerhaven and then through Glengarriff. It was here we had our first sight of *Arbutus Unedo*. No one who has only seen this growing in English gardens can have any idea of what a beautiful tree it is. Some we saw afterwards near Killarney must have been immensely old, with thick stems of a lovely reddish brown. The trees were covered with bunches of the little strawberry-like fruits just beginning to turn red, though not yet grown to their full size. On the same day among damp shady rocks we got *Saxifraga Geum* and *S. hirsuta*. It is incredible that if Bentham had ever seen these two plants in a fresh state he could have thought them the same plant. The next two days we spent at Killarney but were not fortunate in finding the plants we were looking for, though we have found both since then. From there we went to Athenry and after dinner had time for a short walk. We got to a place that reminded us of a bit of Teesdale, as *Gentiana verna* was abundant there and many delightful orchises were in beautiful flower. We started early next morning for Loch Derg to hunt for the rare *Inula salicina* and we had found it before lunch time! It was not quite out and we only found two clumps, but we felt well rewarded. We then decided to go on another 30 miles or so to the little lake at Crusheen to see if we could find *Equisetum trachyodon*, as we had read in an Irish Flora that it was to be found there. Miss Vivian found it nearly at once to our great delight, and it is a very distinct plant. We found it again a few days afterwards quite unexpectedly. Another early start next day and off to Ballyvaughan and Blackhead. At the former place we got *Habenaria intacta*, but the intense heat of the previous weeks had burnt it up very much. At Blackhead, growing among curious limestone rocks, we saw several interesting varieties of Saxifrages, including *Sternbergii*, also *Adiantum Capillus-veneris*, growing in tufts with very large pinnae looking very different to the specimens I have seen in Wales and Jersey. Next day we left Athenry and took train to Clifden and encountered our first rainy day. However, quite undeterred, as soon as we had finished tea we went out to find something new to us, and were rewarded by getting lovely specimens of *Daboecia cantabrica*. It is a very much more handsome plant than it ever is in English gardens, with larger and much more brilliantly coloured flowers. We took a car next day to Roundstone, where we went to look for *Arabis ciliata* on the Sandhills. We had soon found plenty of it, and we then walked across a 1000 ft. high mountain to get *Erica mediterranea* on the other side. We found it without much trouble, but the flowers were, of course, faded. After a rest we took off our shoes and stockings and waded about in a small lake looking for *Naias flexilis* which we did not get. We found *Utricularia intermedia*, of course not flowering, but the leaf is very distinct and very beautiful, looking like a green feather. The next day we had a long railway journey to Roslare and crossed again to Fishguard, and so our Irish trip came to an end after a most successful time. I then stayed in London for a few days and had a day's trip with friends to Essex, where I showed them *Lathyrus tuberosus*, *Melampyrum cristatum*, *Trifolium ochroleucum* and *Bupleurum falcatum*, and a day or two afterwards we went to Burnham Beeches and saw *Danaa cornubiense* in countless thousands. Our next trip started on July 22nd, when we left Thirsk in Mr Foggitt's car and reached Bridge of Allan the first day. We went on next day via Glenfarg to Clova, and at Glenfarg got *Lychnis viscaria* very much burnt up from the heat of the sun. We found several interesting things en route, and I saw for the first time *Rumex alpinus*, which is not supposed to be native, but it was grown in the old days to use the big leaves for wrapping up butter. On the 24th we went up Corrie Fee to find *Carex Grahami*. After very long searching Mr Butcher found it, and I scrambled up to look at it. On the 26th we motored from Clova to Crathie, where we met the rest of our party, and we arranged to start early the next morning to again climb Lochnagar. It proved to be a most perfectly lovely day, with a gorgeous view of all the mountains, and patches of snow were still glistening on some of the higher parts and shady spots. We got to the North Corrie in good time and started our search for the various things we wanted. Miss Vivian found *Poa laxa*, which she specially needed, and then with Mr Butcher climbed the chimney and got to the other side to find *Carex lagopina* in beautiful condition. Mr Foggitt and I returned the same way as we came, but not till Mr Foggitt had found the plant he had come to look for, the rare *Gnaphalium norvegicum*, of which he found several plants at their best, and we all climbed up to look at and admire it. The next day Mr Foggitt and Mr Butcher went part of the way up Ben McDhui to look for Hieracia and I was left on the river bank to search for anything of interest that might be there. I found *Arabis petraea* in masses growing amongst shingle and sand. There were two very distinct forms—one quite glabrous with very finely cut leaves, the other almost grey from a hairy down on the leaves, and both varieties had very large flowers. The following day we drove to Inchnadamph and found the various plants wanted by the different members of the party—*Carex rupestris*, *Arenaria norvegica*, *Helleborine atropurpurea* and *Arctostaphylos alpinus* were some of these that we got, also *Salix Myrsinites*. We left Inchnadamph on the 31st and motored to Altnaharra to get *Carex chordorrhiza*, which we found in plenty in an extraordinary wet bog. We reached Bettyhill that evening. We were out quite early next morning to hunt for the rarities that grow there and found first *Oxytropis uralensis* growing in short turf on a projecting sandhill, also the charming little *Primula scotica*, a much more beautiful plant than *P. farinosa*. We then walked along the sand towards the seashore and there found *Carex incurva* in thousands. It grows nearly buried in the sand with just its little black heads showing and a few little spikey leaves. But if one digs away the loose sand with one's fingers one finds that it grows much like *C. arenaria*, with long roots from which at short intervals tufts of leaves and one or two flowering stems emerge. We also found *Ajuga pyramidalis*, but though the flowering spikes were there, the flowers were quite over. Bettyhill is really a lovely place, with a beautiful white sandy bay, very blue sea, and the vegetation down to the water's edge, composed almost entirely of *Dryas octopetala*. Of course, that was nearly over flowering, but the feathery seed-heads were fascinating. That night we spent at Wick. The following day we went to look for *Calamagrostis stricta*, which we got, and another *Calamagrostis* which, I suppose, is the one Bentham figured as *C. strigosa*, and which Dr Druce named *C. scotica*. After lunch we drove to John o' Groats and on walking along the shore we found masses of *Pneumaria* (*Mertensia*) *maritima* looking absolutely lovely with its leaves covered with a bloom like grapes have and its heavenly blue flowers, the most perfect blue I have ever seen. After our return we walked along the bank of the river and found *Carex salina* and *C. aquatilis*. We were now turning south, and next day we stopped for a time to look at *Moneses uniflora* at Golspie and stayed the night at Carr Bridge, where we got some interesting Hieracia, and next day motored to Galashiels, on our way getting *Nuphar pumila*. Left Galashiels early on August 5th and drove through the Lake district, and at Stock Ghyll I got *Impatiens Noli-me-tangere*, which I had never found before, and got back to London on the 7th. My next trip started on September 1st from Luton, where we took Mr Foggitt to see *Helleborine purpurata*, and that day we reached Lyndhurst and spent the next morning looking for flowers, and were lucky enough to find one specimen of *Spiranthes aestivalis*, which some of the party were most anxious to see. That night we spent in Exeter, leaving early next day and going via Bodmin moor—which was looking perfectly lovely—to Mullion, where we spent the night, first finding masses of *Polygonum maritimum* and *P. Raii*. It was very instructive seeing them growing together, and noticing what very different plants they are. The next day we went to the Lizard, where we got *Gentiana baltica*. *Erica vagans* was looking gorgeous in every range of colour from nearly white to dark purple. We then made for the Land's End, and the splendid little car and Mr Foggitt had completed the journey from John o' Groats to Land's End! Botanically, John o' Groats is the most interesting. On our way back we found *Hypericum undulatum*, which I had long wished to find, and I think it is the most beautiful one of all the family. We also found interesting Fumarias. We went to Camborne for the night, and the following night stayed at South Molton, and the next day the rest of the party left me at Lyndhurst, where I met other botanical friends. There we saw *Utricularia intermedia* again, though not in flower, and found various interesting things, though it was getting late in the year and the trees and bracken had already turned to wonderful copper and gold. We finished our botanical year by a trip to Coniston, where we wished to find *Naias flexilis*, which up till then had evaded us, and we also wanted to get *Hydrilla*. This, however, was not to be found (it was quite over), but we got the

Naias in splendid condition with the help of a kind friend who came with us to fish it up from the bottom of the lake. We also got beautiful specimens of *Callitriche autumnalis* in perfect seed, but we had already seen this in Loch Leven. And so ends a wonderful botanical season in which I personally got 18 Benthamites new to me, leaving me only 25 still to find. Had I had more space I could have gone into fuller details, but it shows what can be done when one has a kind friend and a car!

NATIONAL MUSEUM OF WALES—DEPARTMENT OF BOTANY.

THE WELSH NATIONAL HERBARIUM.

This Herbarium, which is housed in the Department of Botany of the National Museum of Wales, Cardiff, had its origin in the herbarium of the Cardiff Municipal Museum which was taken over by the National Museum. Starting with about 3500 sheets just before the war (during which little progress was made), the Herbarium has now grown rapidly until at the present time it numbers considerably more than 90,000 specimens, by far the greater portion of which, in the form of organised collections, are available for instant reference. It is hoped that some account of an Herbarium of such recent and rapid growth may be of interest.

In the formation of the Welsh National Herbarium certain very definite aims are being pursued. The first aim is the study and exposition of the flora of the Principality. It is well known that of the thirteen vice-counties in Wales and Monmouthshire only three possess county floras which have been published, namely, Carnarvon and Anglesey (by J. E. Griffith), and Glamorgan ("The Flora of Glamorgan," edited by A. H. Trow, and "A Flora of Glamorgan," by H. J. Riddelsdell). A county list for Carmarthenshire has also been published (in Barker: Natural History of Carmarthenshire). Of floras known to be in a more or less advanced state of preparation there are two, namely, "The Flora of Flint and Denbigh" (A. A. Dallman) and that of Monmouthshire by A. E. Wade of the Department of Botany, National Museum of Wales. A county list for Pembrokeshire is also being compiled by Mr Arnett. Many vice-counties thus appear to have been, in a botanical sense, only partially explored: it is the aim of the Department of Botany therefore to acquire a geographical series of flowering plants and ferns, at least, drawn from every part of Wales. It should then be possible on the basis of material in the National Herbarium to compile at least a species list for each vice-county in Wales.

With this end in view the co-operation of field botanists throughout Wales was invited in 1923 and every year since a steady stream of material has flowed into the Department. It should be added, however, that at the present rate of advance it will be many years before the geographical series is reasonably complete and the aid of yet more collectors will be welcome. In addition field work is undertaken by the staff of the Department at all favourable seasons of the year. Thus in 1925 expeditions were made into six counties with the result that two thousand specimens were added to the Herbarium by this means alone.

It is realised that the flora of Wales can only be understood in the light of the comparison of its constituent forms with those occurring in Britain and elsewhere. In particular access to a wide range among the " critical " genera and species is a *sine quâ non* of close study of the flora of any part of Britain. The development of a comprehensive collection of British plants has therefore been prosecuted vigorously of recent years. Among other collections which have been acquired may be mentioned a large number of duplicates given by the late Charles Bailey and the entire collections of A. R. Horwood and the late J. A. Wheldon. In all, the British flowering plants now number over 40,000 sheets. Students of critical genera all know, again, the difficulty of correlating British and Continental work, a difficulty which can only be overcome satisfactorily by referring to actual specimens of the different varieties vouched for by their authors. For this reason, among others, a collection of foreign flowering plants is being formed. To date it numbers some 10,000 sheets.

Before leaving the flowering plants it will be as well to allude to a third aim which is being pursued in forming these collections, namely, the illustration of what may be called the " cultivated flora " of Wales. Specimens of crop plants, hardy ornamental plants and trees and shrubs in cultivation are therefore being collected.

In addition to the herbarium collection of flowering plants there is a collection of seeds of plants native to or cultivated in Britain.

Passing by the ferns and fern allies, we come to the bryophytes, in which this Herbarium is specially rich. The collection of mosses and liverworts is based on that of D. A. Jones, which was purchased in 1920. It has recently been more than doubled by the addition of the collections of the late J. A. Wheldon. The last-named botanist was well known, specially as an authority on the Sphagnaceae and the Harpidioid Hypna and his collection is probably unrivalled in its representation of these two groups. The Museum collections of British bryophytes contain in all 23,600 packets of mosses and 5100 of liverworts and there are also smaller collections of foreign bryophytes.

Among the lower plants the most notable collections are those of British Lichens (5000 specimens), and marine Algae (Mrs E. M. Holmes' collection of 1500 sheets).

As has already been stated, the collections in the Welsh National Herbarium are for the most part systematically arranged and available for reference. That they are not consulted more often by botanists is due probably in part to the fact that their existence has not yet become very widely known. It is hoped that workers desirous of consulting the collections, but unable to visit Cardiff, will not hesitate to communicate with the Keeper of the Department of Botany, National Museum of Wales, Cardiff, who will be pleased to answer any enquiries.

I should like, in conclusion, to thank the Editor, who has recently accepted nomination as a Correspondent of the National Museum of Wales, for so kindly placing these pages at my disposal.

H. AUGUSTUS HYDE.

ON COLLECTING FOR EXCHANGE CLUBS.

By Lt.-Col. A. H. Wolley-Dod, F.L.S.

When I was first advised to join the Botanical Exchange Club by the late Mr F. Townsend in the early nineties I demurred, since I was then only a beginner and was somewhat alarmed by the List of Desiderata, never having to my knowledge seen a single one of them growing. I was not much reassured by being told that I would soon find specimens, though while on a visit to Mr Townsend he showed me two or three at Honington. However, I joined, and though of recent years I have not been an active contributor, I have always endeavoured to send only species and varieties which were asked for. I sent in a list of my own Desiderata regularly, but found that I received very few things which I asked for, and what was worse, much that I did not want, and which was not in the Club's List of Desiderata.

There has been in recent years an increasing tendency to send in all sorts of more or less common plants. I have always maintained that specimens of almost any British plants, if only they are carefully selected and well dried, should be acceptable in most herbaria, but, unfortunately, these conditions are not always fulfilled.

There is another occasional source of superfluous supply of specimens. If a name is found for any variety new to Britain, but not to science, and really a common form, it is seized upon as an opportunity for members to flood the Club with it, often for more than one year. Aliens also, though they have some interest, should be sent in more sparingly. Their numbers are almost limitless.

I have no doubt that many members besides myself still feel my initial difficulty in finding the Clubs' Desiderata, and equally, no doubt, rather than be left out of the distribution, they collect anything which appears to them to be uncommon, and indeed may be so locally, but which is not wanted by the Club.

This flooding of the Club with undesirable plants has more than one objection. Firstly and chiefly, it throws a lot of unnecessary work on the Distributor. Secondly, it greatly prolongs the Report and, therefore, the expenses of the Club. Thirdly, at least in my own case, it leads members to refrain from the trouble of making a list of their own Desiderata, knowing that they will get few or none of the plants they ask for. Thus the Distributor is kept without information whereby to draw up a list of next year's Desiderata.

The sending in of examples of critical genera, such as *Hieracium*, *Salix*, *Rubus*, *Rosa*, etc., is more difficult to legislate for. In *Rosa*, at any rate, nearly all except about a dozen varieties are probably acceptable to those who collect them. Critics of other large genera are best capable of saying which varieties of those genera should appear in the Desiderata List. It should be borne in mind that the mere naming of forms for members is not one of the Clubs' primary functions.

The remedy lies in members' own hands. So long as some send in undersirable plants, others are sure to do the same, and some such drastic remedy would be required as authority given to the Distributor to destroy such contributions.

Could not the work of the Clubs be restricted more to their original function, namely, the exchange of rare plants, the definition of " rare " being such plants as are in the Clubs' Desiderata Lists?

[The Secretary would like to point out that if members receive plants they do not want they may give them away or destroy them. What is one man's meat is another man's poison. The formation of a Desiderata List is a great expense and trouble, and it is out of date as soon as printed. Some members will not have *Rosa*, *Rubi*, or *Hieracia;* others want only those genera. It appears to the Secretary that the Regulations for Exchange Members, already printed, cover our needs—in that the fullest criticism is invited in order that the majority of members may get what they want. In his own case this year, there were only two or three plants out of the great lot sent that he desired, but he was glad to put in the other specimens as varieties or representing some different condition. Mr Fryer said there was no such thing as a duplicate. The space these names take up is small—a dozen of them take much less space than the criticisms (often mutually contradictory) upon some micro-species. It must be remembered, too, that fresh members are coming in yearly and that what is caviare to an old member may be quite a bon bouche to them.]

HUNTINGDONSHIRE PLANTS.

By G. Claridge Druce.

The following plants are not (unless so stated) included in *Top. Bot.* Unless otherwise marked they are the writer's discoveries from the years 1876-1925.

Ranunculus Drouetii F. Sch. Hod Fen, Miss Powell; near Stilton.
R. Baudotii Godr. Graffham brick-pit, Hunnybun.
R. hederaceus L. Hemingford, Hunnybun.
†Cammarum hyemalis Green. Orton, Huntly.
Aquilegia vulgaris L. Stibbington.
Berberis vulgaris L. Orton, Huntly; Brampton, Raynor.
†Capnoides lutea Gaertn. Huntingdon, Dix; Alwalton.
†C. solida Moench. Huntingdon, Hunnybun.
†Cheiranthus Cheiri L. Elton; Buckden.
†Barbarea verna Asch. Buckden, W. R. Linton.
†B. intermedia Bor. Wood Alton Fen, Hunnybun.
Cardamine flexuosa With. Wood Walton.
†Alyssum alyssoides Jacq. Ramsey St Mary, 1905, Hunnybun.
†Sisymbrium altissimum L. Fletton, 1890.
S. officinale L., var. leiocarpon (DC.). Godmanchester.
†S. orientale L. Godmanchester.
†Camelina sativa Cr. Orton, Huntly; Farcet, Bird.
†Brassica Rapa L. Stukeley, etc.
†B. Napus L. Yaxley, Huntly.
†B. Rutabaga DC. Elton.
†B. alba Boiss. Yaxley, Bird; Godmanchester.
Bursa anglica (At.). Fletton, etc.
B. Druceana (At.). Ramsey; Wood Walton.
B. patagonica (At.). Fletton.
B. turoniensis (At.). Wood Walton.
B. batavorum (At.). Fletton.
†Lepidium Draba L. Fletton, etc.
†L. ruderale L. Fletton, 1904.
†L. sativum L. Fletton, 1904.

†L. VIRGINICUM L. Godmanchester, 1925.

TEESDALEA NUDICAULIS Ait. Holme Fen, Mrs BIRD.

RESEDA LUTEA L. Fletton.

VIOLA MONTANA L. Wood Walton, 1925. "Exactly the same as the original gathering," says Mrs Gregory. With it grew hybrids of *canina.*

V. AGRESTIS Jord. Elton.

V. RURALIS Jord. Orton.

V. SEGETALIS Jord. Stibbington.

†SAPONARIA OFFICINALIS L. Brampton, Mrs KING.

†S. VACCARIA L. Yaxley, Mrs BIRD.

†SILENE ANGLICA L. Farcet, Mrs BIRD.

LYCHNIS DIOICA L. Orton Watermills, HUNTLY.

STELLARIA MEDIA Vill., var. BORAEANA Jord. Elton.

S. NEGLECTA Weihe. Huntingdon, HUNNYBUN.

S. DILLENIANA Moench. Wood Walton.

[The var. PALUSTRIS is in *Top. Bot.* as S. GLAUCA.]

†CERASTIUM TOMENTOSUM L. Elton.

SPERGULA SATIVA Boenn. Somersham, FRYER.

†CLAYTONIA PERFOLIATA L. Yaxley, BIRD.

†HYPERICUM CALYCINUM L. Alwalton (!), HUNTLY.

†TILIA EUROPAEA L. Elton, etc.

†T. GRANDIFOLIA Ehrh. Ramsey.

T. CORDATA Mill. Stibbington.

†IMPATIENS PARVIFLORA DC. Paxton, HUNTLY.

†OXALIS CORNICULATA L. Farcet, BIRD.

O. ACETOSELLA L. Rare, Brampton, RAYNOR; Alconbury, NEWTON.

†ACER PSEUDO-PLATANUS L. Alwalton, etc.

A. CAMPESTRE L., var. LEIOCARPON Wallr. Ramsey; Upton. Var. DISSECTUM Druce. Upton.

†MEDICAGO SATIVA L. Chesterton; St Neots, etc.

†MELILOTUS INDICA All. Buckden, HUNNYBUN.

†M. ALBA Desr. Orton, 1878, HUNTLY.

TRIFOLIUM PRATENSE L., var. PARVIFLORUM Bab. Huntingdon, HUNNYBUN. Var. ALBUM. Holme Fen, 1889, HUNTLY

T. ARVENSE L. Near Wansford.

†T. INCARNATUM L. Buckden, 1901, HUNNYBUN.

†T. RESUPINATUM L. Huntingdon, DIX.

[T. FILIFORME L. in *Journ. Bot.* from Holme Fen, Fryer, is probably an error. There is no specimen of it in his herbarium. The same holds true of Mr Newbould's *Ornithopus*. Both need confirmation.]

†ONOBRYCHIS ONOBRYCHIS (L.). Warboys, FRYER; Wansford.

†VICIA DASYCARPA Ten. Farcet, BIRD.

†V. SATIVA L. Chesterton, HUNTLY; etc.

LATHYRUS NISSOLIA L. Already recorded, but new locality at Godmanchester, HUNNYBUN; Stibbington.

PRUNUS INSITITIA L. Thurning, 1878.

P. SPINOSA L., var. MACROCARPA Wallr. Buckden, HUNNYBUN.

†P. DOMESTICA L. Buckden, HUNNYBUN; Ramsey, etc.

SPIRAEA ULMARIA L., var. DENUDATA Boenn. Wood Walton.

RUBUS COLEMANNI Blox. Wood Walton, HUNNYBUN and DRUCE.

R. ECHINATUS Lindl. Monks Wood.

R. ANGLICANUS Rogers. Monks Wood, 1925.

R. CARPINIFOLIUS Weihe. Holme, 1925.

R. DUMETORUM W. & N. Ripton Wood, 1925.

POTENTILLA ANSERINA L., var. NUDA Gray. Port Holme; Earith.

P. PROCUMBENS Sibth. Monks Wood, 1908; Ripton.

†P. NORVEGICA L. Holme Fen, 1899, HUNNYBUN; Wood Walton.

†POTERIUM POLYGAMUM W. & K. St Neots railway, 1912.

ROSA ARVENSIS Huds., var. GALLICOIDES Baker. Archers Wood, HUNNYBUN; Winnington.

R. SYSTYLA Bast. Already recorded. Upton Wood. Var. GARROUETII (P. & R.). Buckden, 1910, HUNNYBUN.

R. DUMALIS Bechst., var. INSIGNIS (Rouy). Winnington.

R. DUMETORUM Thuill. Lutton, 1911. Var. CALOPHYLLA Rouy. Near this at Upton.

[R. FRONDOSA, R. MARGINATA and R. ARVATICA of the Lintons' list need verification.]

PYRUS MALUS L., var. MITIS Wallr. Brampton Wood, 1907, HUNNYBUN.

†P. COMMUNIS L., var. PYRASTER (Bor.). Brampton Wood, HUNNYBUN.

†P. ARIA Ehrh. Planted at Alwalton.

P. TORMINALIS Ehrh. Paxton & Monks Wood, HUNNYBUN.

†P. AUCUPARIA Ehrh. Doubtless planted. Brampton, RAYNOR.

Crataegus monogyna Jacq., var. laciniata Wallr., var. incisifolia Druce, var. quercifolia Loud., and var. splendens Druce. Ramsey. × oxyacanthoides. Ramsey; Monks Wood.

†Ribes Uva-crispa L. Stibbington.

†R. rubrum L. Water Newton.

Sedum album L. Elton.

Callitriche stagnalis Scop. Wood Newton, 1876. Var. platycarpa (Kuetz). Paxton.

C. intermedia Hoffm. Oakley Dyke.

Epilobium angustifolium L. An increasing species, Monks Wood, 1898, Hunnybun; King's Ripton, etc.

†Oenothera biennis L. Yaxley, Dix.

Carum segetum Benth. Millbank, Godmanchester, 1901, Hunnybun. Newbould's record he afterwards thought to be wrong.

†C. Petroselinum B. & H. Elton.

Pimpinella Saxifraga L., var. poteriifolia Wallr. Orton, Huntly. Var. dissecta With. Orton, Huntly.

†Petroselinum sativum B. & H. Elton.

Oenanthe crocata L. Brampton, Raynor; Yaxley, Bird. I have seen neither specimen.

†Foeniculum Foeniculum (L.) Karst. Relic of culture, Yaxley, Huntly.

Angelica sylvestris L., var. decurrens Wallr. Water Newton.

Adoxa Moschatellina L. Brampton, Rev. G. H. Raynor.

Sambucus nigra L., var. laciniata L. Earith; Crossfield.

Galium erectum Huds. Wood Walton. With it the hybrid with verum. See *Rep. B.E.C.* 332, 1908. It remains constant in cultivation.

Valeriana officinalis L. Upton Wood.

†Erigeron canadense L. Godmanchester, 1900, Hunnybun.

Achillea Millefolium L., var. conspicua Druce. Orton.

†Chrysanthemum Parthenium Bernh. Elton.

†Matricaria suaveolens Buch. Fletton.

Senecio aquaticus Hill, var. pennatifidus Gren. & Godr. Earith.

S. sylvaticus L., var. auriculatus Mey. Holme Fen, Hunnybun.

S. vulgaris L., var. multicaulis (Trow) and var. praecox (Trow). Godmanchester, 1900, Hunnybun. Var. erectus (Trow). Ramsey.

[S. PALUDOSUS was planted at Wood Walton with *Sonchus palustris* by the Hon. N. C. Rothschild. The latter has spread rapidly.]

ARCTIUM NEMOROSUM Lej. Wood Walton, etc.

CARDUUS NUTANS × ACANTHOIDES. Alconbury.

CIRSIUM ARVENSE × LANCEOLATUM. Orton, HUNTLY.

C. ARVENSE Scop., var. MITE Koch. Wood Walton. †Var. SETOSUM (Meyer). Offord Mills, 1902, HUNNYBUN.

†MARIANA MARIANA Hill. Godmanchester.

CENTAUREA NIGRA L., var. NEMORALIS (Jord.). Home; St Neots. Var. OBSCURA (Jord.). Lufford.

†C. JACEA L. Abbott's Ripton railway, 1903.

†C. CALCITRAPA L. Brickyard, Farcet, BIRD.

†C. SOLSTITIALIS L. Godmanchester, 1897, HUNNYBUN.

CREPIS BIENNIS L. Wansford, 1878.

C. CAPILLARIS Wallr., var. ANGLICA Druce & Thell. Earith; Fletton.

HIERACIUM BOREALE L. Huntingdon, DIX. Var. CALVATUM F. J. H. Brampton, 1901, HUNNYBUN.

H. UMBELLATUM L. Yaxley, 1888, HUNTLY.

LEONTODON AUTUMNALIS L., var. SORDIDA Bab. Water Newton.

TARAXACUM FASCIATUM Dahlst. St Neots.

T. TENEBRICANS Dahlst. Fletton.

T. LACISTOPHYLLUM Dahlst. St Neots.

T. NAEVOSUM Dahlst. Godmanchester.

T. ANGLICUM Dahlst. Port Holme.

SONCHUS ASPER Hill, var. INTEGRIFOLIUS Lej. Orton, etc. Var. PUNGENS Bisch. St Neots.

S. OLERACEUS L., var. TRIANGULARIS Dum. Alwalton, etc. Var. CILIATUS Lam. Stranground, etc.

†TRAGOPOGON PORRIFOLIUS L. Completely naturalised and abundant. Fletton brickyards.

CAMPANULA RAPUNCULOIDES L. In some quantity in arable soil. Wood Walton.

PRIMULA ELATIOR Jacq. Gransden Wood, RAYNOR. See Miller Christy in *Journ. Linn. Soc.* 185, 1897.

LYSIMACHIA VULGARIS L., var. MACULATA Druce. Alwalton.

L. NEMORUM L. Yaxley, BIRD; Alwalton, NEWTON. But it needs confirmation as a native plant of the county.

†VINCA MAJOR L. Charleston.

[GENTIANA CAMPESTRIS L. is given from Alconbury, in Mrs Newton's list, but confirmatory evidence is needed.]

MENYANTHES TRIFOLIATA L. Alconbury, Mrs NEWTON.

†SYMPHYTUM PEREGRINUM Ledeb. St Neots.

†BORAGO OFFICINALIS L. Somersham, NEWBOULD.

†LAPPULA LAPPULA (L.) Druce. Yaxley, BIRD.

LYCOPSIS ARVENSIS L. Orton, HUNTLY.

†CUSCUTA TRIFOLII Bab. Thurning, 1877.

†ATROPA BELLADONNA L. Elton Churchyard, PEIRCE.

†DATURA STRAMONIUM L. Orton, HUNTLY.

†LYCIUM CHINENSE Mill. Chesterton.

†FRAXINUS EXCELSIOR L., var. HETEROPHYLLA. Eynesbury, 1873, S. H. PAYNE.

VERBASCUM NIGRUM L. Stibbington, native.

LINARIA MINOR Desf. St Neots railway, 1908.

†L. REPENS Mill. St Neots, 1908.

†L. PURPUREA Mill. Elton.

†L. CYMBALARIA Mill. Ramsey, etc.

†ANTIRRHINUM MAJUS L. Ramsey Abbey.

VERONICA AQUATICA Bern. Ramsey; Wansford.

EUPHRASIA STRICTA Host. Wood Walton. So named by Lindman.

E. NEMOROSA Pers. Holme.

BARTSIA ODONTITES Huds., var. VERNA. Buckden, HUNNYBUN.

RHINANTHUS STENOPHYLLUS Schur. Holme Fen, 1879, FRYER.

OROBANCHE MAJOR L. (ELATIOR). Alconbury, Mrs NEWTON. Sp. non vidi.

UTRICULARIA MAJOR Sch. Godmanchester, 1911, HUNNYBUN.

MENTHA VERTICILLATA L., var. RIVALIS (Baker). Wansford.

SATUREIA NEPETA Scheele. Orton, 1851, HUNTLY.

PRUNELLA VULGARIS L., var. NEMOROSA Beg. Upton.

†STACHYS ARVENSIS L. and †S. ANNUA L. Chamber's Dole, BIRD.

PLANTAGO MAJOR L., var. INTERMEDIA (Gil.) Syme. Fletton; Wood Walton, etc.

CHENOPODIUM RUBRUM L., var. BLITOIDES Wallr. Huntingdon, HUNNYBUN.

†C. OPULIFOLIUM Schrad. Fletton.

†C. VULGARIS L. Huntingdon, HUNNYBUN.

ATRIPLEX DELTOIDES Bab. Water Newton, 1876.

POLYGONUM PETECTICALE (Stokes) Druce. Ramsey, 1908.

P. MINUS Huds. Huntingdon.

P. AEQUALE Lindm. St Neots, 1912.

× RUMEX WEBERI Fisch.-Benz. Earith.

× R. ACUTUS L. Earith; Fletton.

†FAGOPYRUM FAGOPYRUM (L.) Karst. Orton, 1857.

EUPHORBIA AMYGDALOIDES L. Alconbury, NEWTON; Brampton. HUNNYBUN.

†E. CYPARISSIAS L. Yaxley railway, HUNNYBUN. This may be *virgata.*

†BUXUS SEMPERVIRENS L. Alwalton.

†MERCURIALIS ANNUA L. Yaxley, BIRD.

ULMUS GLABRA Huds. Stibbington.

× U. VEGETA Lindl. Ramsey, 1908.

× U. MAJOR Sm. Stilton, etc.

†U. WHEATLEYI = *U. minor* Mill., var. *sarniensis.* Connington.

U. CARPINIFOLIA Bord. (NITENS). Godmanchester, HUNNYBUN; Elton, 1908. Var. HUNNYBUNI Moss. Huntingdon, HUNNYBUN.

U. PLOTII Druce (U. MINOR Henry, not of Miller. U. SATIVA Moss, not of Miller). Norman Cross, etc.

PARIETARIA RAMIFLORA Moench, var. FALLAX Gurke. Huntingdon, HUNNYBUN.

BETULA ALBA L. Holme Fen, 1899, HUNNYBUN.

B. PUBESCENS Ehrh. Wood Walton, HUNNYBUN.

†CASTANEA CASTANEA (L.) Karst. Alwalton.

†QUERCUS CERRIS L. Large planted trees near Elton.

†FAGUS SYLVATICA L. Planted at Alwalton.

SALIX FRAGILIS L., var. DECIPIENS (Hoffm.). Wood Newton.

S. ALBA L., var. CAERULEA (Sm.). Elton, etc.

× S. VIRIDIS Fries. Ramsey, etc.

†S. DAPHNOIDES Vill. Brampton, HUNNYBUN.

S. PURPUREA L., var. LAMBERTIANA (Sm.). Godmanchester, HUNNYBUN.

S. VIMINALIS L., var. LINEARIFOLIA Wimm. Wood Walton.

× S. SMITHIANA Willd. Water Newton, 1877.

S. CAPREA × CINEREA. Huntingdon, HUNNYBUN.

S. CINEREA L., var. OLEIFOLIA (Sm.). Huntingdon, HUNNYBUN.

S. AURITA × CINEREA × CAPREA. Ufton.

S. AURITA × CINEREA. Holme.

S. AURITA L. × VIMINALIS L. Holme, LINTON.

†POPULUS NIGRA L., var. BETULIFOLIA Torrey. Huntingdon, HUNNYBUN.

†P. SEROTINA Hartig. Common, Wood Walton, etc.

†P. CANADENSIS Moench. Huntingdon.

†P. TACAMAHACCA Mill. Huntingdon, HUNNYBUN.

†P. ITALICA Moench. Ramsey, etc.

HELLEBORINE PALUSTRIS Schrank. Holme Fen, HUNNYBUN.

ORCHIS INCARNATA L. Wood Walton, 1908.

O. FUCHSII Druce. Stibbington; Alconbury, etc.

O. PRAETERMISSA Druce. Wood Walton.

IRIS FOETIDISSIMA L. Washingley; Folkswood, 1873.

†NARCISSUS MAJOR Curt. Between Norman Cross and Stilton, HUNTLY.

†LILIUM MARTAGON L. Plantation. Buckden, HUNNYBUN.

†FRITILLARIA MELEAGRIS L. Brampton, Mrs KING.

COLCHICUM AUTUMNALE L. Monks Wood.

ACORUS CALAMUS L. Nene side.

ALISMA PLANTAGO-AQ. L., var. LANCEOLATUM (With.). Oakley Dyke. Var. LATIFOLIUM Kunth. Ramsey.

POTAMOGETON PANORMITANUS Biv. Near Ramsey.

P. TRICHOIDES C. & S. Ramsey. × PUSILLUS = P. FRANCONICUS Fisch. Near Peterborough.

CAREX ACUTIFORMIS Ehrh., var. SPADICEA (Roth). Wansford.

C. DISTANS L. Near Elton. A second locality for the county.

C. OEDERI Retz., var. ELATIOR And. Wood Walton.

C. VULPINA L., var. NEMOROSA Lej. Water Newton.

†SETARIA VIRIDIS Beauv. Huntingdon, HUNNYBUN.

†PHALARIS CANARIENSIS L. Orton, HUNTLY.

ALOPECURUS PRATENSIS L., var. CAESIA Richt. Upwood.

PHLEUM PRATENSE L., var. INTERMEDIUM (Jord.). Wood Walton.

AGROSTIS PALUSTRIS Huds., var. PROREPENS (Koch). Earith.

†APERA SPICA-VENTI Beauv. Huntingdon, DIX.

HOLCUS MOLLIS L. Holme, etc.

†AVENA STRIGOSA Schreb. Wood Walton.

ARRHENATHERUM TUBEROSUM (Gilib.) Druce. Orton, 1878.

PHRAGMITES PHRAGMITES (L.) Karst., var. EFFUSA (A. & G.). Pidley. Var. FLAVESCENS (Cust.) Druce. Ramsey.

†CYNOSURUS ECHINATUS L. Godmanchester.

KOELERIA GRACILIS Pers. Orton, HUNTLY.

POA PRATENSIS L., var. SUBCAERULEA (Sm.). Stibbington, etc.

GLYCERIA FLUITANS Br., var. PEDICELLATA (Towns.). Oakley Dyke.

†G. DISTANS Wahl. Godmanchester.

†BROMUS LEPTOSTACHYS Pers. St Neots.

AGROPYRON REPENS Beauv., var. LEERSIANUM Gray. St Neots.

†PINUS SYLVESTRIS L., †P NIGRA Ait., †TAXUS BACCATA L., and †LARIX LARIX Karst. are all planted at Alwalton.

EQUISETUM PALUSTRE L. Oakley Dyke, etc.

DRYOPTERIS ARISTATA Druce. Holme.

CHARA HISPIDA L. Wood Walton.

C. ASPERA Willd. Oakley Dyke.

C. DESMACANTHA Gr. & B.-W. Ramsey.

C. FRAGILIS Desv. Oakley Dyke.

NOTES ON SOME OF THE SEGREGATES OF ERODIUM CICUTARIUM L'HERIT.

By E. GILBERT BAKER.

These notes deal only with forms occurring inland, the coast forms having been dealt with in a paper in the *Journal of Botany* in 1920, by C. E. Salmon and E. G. Baker.

I. ERODIUM CICUTARIUM L'Hérit in Aiton Hort. Kew., ed. 1, vol. 2, p. 414, is founded on the *Geranium cicutarium* L. There is a specimen of this in the Linnean Herbarium and also in the Hortus Cliffortianus at South Kensington.

Linnaeus diagnoses it as follows:—Geranium pedunculis multifloris, calycibus pentaphyllis, floribus pentandris, foliis pinnatis incisis obtusis. Hort. Cliff. 314; Fl. Suec. 579; Mat. Med. 337; Roy. Lugdb. 352; Hall. Helv. 369; Dalib. Paris 208.

Geranium cicutaefolio, minus et supinum Bauh. Pin. 319. *Geranium supinum* Dod. Pempt. 63.

Habitat: in Europae sterilibus cultis.

The type is a plant, therefore, with many-flowered peduncles, petals not spotted, longer than the calyx, and leaflets not incised to the midrib.

There are a number of plants which might be quoted as fairly presenting the type such as, for instance, Herb. J. E. Little, Hitchin, Herts, No. 497.

II. The true ERODIUM CHAEROPHYLLUM Steud. (*Erodium dissectum* Rouy) is founded on *Geranium chaerophyllum* Cavanilles. Cavanilles gives a figure and description from which we gather the stem is erecto decumbent; leaves with long petioles, bipinnate, with pinnules acute; stipules ovate-acuminate; flowers umbellate, many-flowered; petals slightly longer than the calyx, orbicular, blue; beak of fruit 30-35 mm. long. The type comes from the neighbourhood of Paris. The great majority of the material so named does not conform with the character of the petals. Some of it more nearly resembles *Boraeanum* Jord.

III. The true ERODIUM TRIVIALE Jord., of which there is material from Jordan at South Kensington, is a plant with stems erecto-decumbent; leaves with finely cut narrow acute segments; flowers many, pedunculate, 6-9 together; petals rose-purple, very unequal, unspotted; beak of fruit 35-40 mm. long. This is a not uncommon form.

IV. ERODIUM PALLIDIFLORUM Jord., of which there are also specimens from Jordan at South Kensington, is a plant with many-flowered peduncles; leaves not incised to the middle; petals pale, longer than the calyx; beak of the fruit 35-45 mm. long.

V. ERODIUM PIMPINELLAEFOLIUM Sibth. Fl. Oxon. 211 has many-flowered peduncles; leaves pinnate; leaflets pinnatifid; upper petals bimaculate.

It has been recorded from several English counties. Perhaps *E. praetermissum* Jordan is hardly distinct.

VI. ERODIUM PRAETERMISSUM Jordan has diffuse stems; leaflets incised, pinnatifid; lobes oblong, not contiguous, nearly obtuse; peduncle 2-8 flowered; petals unequal, two upper spotted; stigmas deep purple-violet; carpels hairy with a nearly circular depression.

VII. Erodium Boraeanum Jordan has hairy, diffuse or ascending stems; leaflets oval-oblong, incised, pinnatifid, with obtuse lobes nearly contiguous; petals pale rose or whitish only, slightly longer than the calyx; stigmas pale.

VIII. Erodium commixtum Jordan has diffuse stems with short white hairs; leaflets oval-oblong, incised, pinnatifid, with oblong not contiguous lobes; peduncle 4-6 flowered; petals of a beautiful red, unequal, oblong, longer than the calyx, two upper spotted; beak of fruit with fine hairs. The pedicels are rather long.

In the Herbarium these plants are very difficult of discrimination, and for their determination careful notes should be made of the colour and length of the petals, whether spotted or not, and also the colour of the stigmas in a fresh state.

ERODIUM CICUTARIUM.

Knuth in Pflanzenreich 53, heft. iv., 129, p. 271.

(A) Pit of carpel not surrounded by a furrow. Fertile stamens with filament subdentate or suddenly enlarged at base.

(a) Peduncles few flowered (2-3), more or less shorter than leaves.

1. Very glutinous. Beak of carpel 15-20 mm. long. .... *E. glutinosum* Dum.

2. Slightly glandular or glutinous. Beak of carpel 25-29 mm. long. *E. dentatum* Dum.

(b) 3. Peduncles many flowered (3-5), more or less longer than leaves. *E. neglectum* Salm. & Bak.

(B) Pit of carpel surrounded by a furrow. Fertile stamen with filament gradually enlarged at base.

4. Glandular Peduncles many flowered, leaflets broad. .... *E. Lebelii* Jord.

5. Eglandular Peduncles few flowered, leaflets narrow. .... *E. Ballii* Jord.

(C) Pit of carpel not surrounded by a furrow. Fertile filament subdentate or suddenly enlarged at base.

(c) Peduncles (2-3) flowered, short.

CLAVIS TO FORMS OF CENTAUREA NIGRA.

By C. E. Britton.

Involucre not spinous.

†Capituli usually radiant and fruit not pappose.

1. *C. Jacea, L.*

Phyllary appendages entire or irregularly torn.

a *eu-jacea* (Gugl.).
Branches few, short; leaves elliptical-lanceolate.

b *jungens* (Gugl.).
Branches numerous, longer; appendages usually appressed, closely imbricate, laciniate or fimbriate.

c *angustifolia* Briq.
Branches as in *b*; leaves narrow; capitulum small; appendages entire or irregularly torn.

d *nemophila* (Jord.).
Differs from preceding in its globular capitulum: appendages appressed, fimbriate; leaves long and narrow.

e *subjacea* (Beck).
Leaves ovate-lanceolate or oblanceolate; capitulum ovoid-globular; appendages dark-brown, upper roundish, lower triangular, pectinate.

f *vireiorum* (Jord.).
Leaves linear-lanceolate, capitulum globular; appendages with pale or silvery margins, fimbriate, and darker centres.

g *pratensis* Briq.
Appendages brown, lower pectinate with oval or lanceolate disks, upper laciniate with broader disks.

††Capituli usually not radiant and fruit usually pappose.

2. *C. nigra* L.

Phyllary appendages pectinate.

a *obscura* (Jord.).
Capitulum large, roundish; appendages black or blackish-brown.

b *surrejana* (C. E. B.).
Capitulum smaller, roundish, subsessile or shortly stalked; stem leaves elongated, subequal.

c *Drucei* (C. E. B.).
Capitulum roundish; appendages brown, disks oval, teeth small, less filiform; leaves with small stipule-like lobes at base.

d *nemoralis* Gremli.
Capitulum ovoid, small; appendages brownish, teeth much longer than width of lanceolate disks.

e *microptilon* (C. E. B.).
Capitulum ovoid or ovoid-elongate, small; appendages linear-lanceolate, spreading or recurved.

f *Debeauxii* (C. E. B.).
Capitulum small; appendages with linear-lanceolate disks, appressed, not wholely covering phyllaries,

NOTE ON SORBUS ARSENII Britton.

By Louis Arsène.

When residing at Saint-Pierre, one of the Miquelon Islands, South of Newfoundland, I collected in the Grande Miquelon, at the foot of a small isolated mount called Chapeau de Miquelon, a curious *Sorbus* related to *Sorbus fennica* Fries, native in Northern Europe, and to *Sorbus spuria* Pers., of garden origin, a supposed hybrid between *Sorbus aucuparia* and *Aronia melanocarpa.*

Mr Nathaniel Lord Britton, Director-in-Chief of the New York Botanical Garden, to whom the Miquelon plant was submitted, treated it as a new species, and named it *Sorbus Arsenii.* It is clearly an intermediate between *Sorbus americana* Marsh and *Aronia atropurpurea* Britton (*Aronia arbutifolia* Ell., var. *atropurpurea* Robinson), and is perhaps a hybrid of these two plants, which are common at Miquelon and very often grow together.

The leaves of *S. Arsenii* are usually pinnate below with 1-3 pairs of leaflets; some of the leaflets are decurrent as in *S. fennica* and some are quite free and of the same shape as those of *S. americana;* there are leaves that have an odd leaflet as is often the case in *S. spuria*, and the small, superior leaves are sometimes quite entire. The floral cymes are much smaller than in *S. americana*, and about the same size or a little larger than in *A. atropurpurea*, but the pedicels and calyx are not so tomentose as in the last-named plant. The Miquelon plant was, when I saw it, about six feet high. *Sorbus americana* is not, in Miquelon, higher than twelve feet, and rarely exceeds eight feet, and *Aronia atropurpurea*, though attaining, on the American continent, from twelve to fifteen feet, is usually in Miquelon a very small shrub, often prostrate, and when erect not more than one or two feet high.

As I had to leave the French colony unexpectedly, I could not study properly that *Sorbus* and see, for instance, if it gives fruit and reproduces itself from seed. My specimen was collected on the 25th of July 1902, and I left Saint-Pierre on the 17th July in the following year, without having had time to go back to Miquelon and see the locality again. Our steamer stopped for one hour at Chaleur Bay, Newfoundland, fifty miles North of Miquelon, on the

19th of July 1903, and I saw, about half a mile from the whale oil factory, two or three specimens of *Sorbus Arsenii*, but I did not see if the supposed parents grew in the vicinity as was the case at the Chapeau de Miquelon. In the last place, there were four or five individual plants of *S. Arsenii* not far from a bush of *S. americana*, and *Aronia atropurpurea* was growing in quantity in the swamps near by.

Since my departure from Saint-Pierre and Miquelon, twenty-two years ago, I tried several times, unsuccessfully, to find a correspondent willing and able to examine scientifically *Sorbus Arsenii*, particularly with regard to its relation with its supposed parents. There were no botanists in the Islands. I have just written to a friend who, I hope, will be able to settle the question of fructification of the plant, and to send me either seeds or living specimens.

Did ever an experimenter try to hybridise *Sorbus americana* and *Aronia atropurpurea*, and succeed in producing an intermediate plant? The experiment is worth trying. There are a good number of garden hybrids between plants of the different classes of *Pyrus*, *Aria*, *Sorbus*, *Aronia*, etc.

I wonder if *Aronia atropurpurea*—the plant growing in Newfoundland—is known in England. It is not recorded in the Kew List of Trees and Shrubs, and is not described in Bean's "Trees and Shrubs." Perhaps it is included in *Aronia arbutifolia*, which is represented, on this side of the Atlantic, by several forms or varieties, and, according to Mr Bean, is known under several names in gardens, and is often confused with *Aronia melanocarpa*, with which it has hybridised. The Miquelon plant seems to resemble the var. *pumila* (of *A. arbutifolia*) described by Loudon.

Dr Britton (*Ill. Flora*, ed. 2, 1913, ii., p. 290) considers *Aronia atropurpurea* as quite distinct specifically from *Aronia arbutifolia* proper. Its fruit is oval to globose and purplish black, whereas that of *A. arbutifolia* is pyriform and bright red. *Aronia atropurpurea* grows further north than *Aronia arbutifolia*, which does not reach Canada and whose northern limit is Massachussetts. It differs also very much from *Aronia melanocarpa* by the far greater pubescence of its cymes and leaves. I have specimens of *A. melanocarpa* collected by me near Montreal in 1905, and the leaves and the calyx and pedicels of flowers are glabrous or nearly so.

OBSERVATIONS ON *NYMPHOIDES PELTATUM*, *HYDROCHARIS MORSUS-RANAE*, AND *ELODEA CANADENSIS* IN SUSSEX.

By J. Gordon Dalgleish.

All these plants are to be met with in Sussex, occasionally growing in the same situation. *Nymphoides peltatum* is one of the rarest of British aquatic angiosperms. In West Sussex it has completely disappeared from its former haunt on Duncton Common, and is now only found on the lower pond in Petworth Park, where it may have been introduced. In East Sussex it grows sparingly in a few localities where marsh lands, intersected with numerous ditches, form the principal feature of the landscape. Once established and allowed to grow unmolested the growth is vigorous, covering in some places quite a large area of water. This luxuriant growth was noticed by the writer in the Thames Valley, also in India, where two closely allied species, *Nymphoides indicum* and *Nymphoides cristatum*, covered many tanks and ponds almost entirely. Here in Sussex, owing to constant ditch clearing operations during the winter months, *Nymphoides* has its growth considerably checked, and in some places, it is to be feared, it is only a question of time before this beautiful plant will be completely exterminated. It is unfortunate that, according to the rules of priority, the specific name of *peltatum* must stand instead of the much more appropriate one of *nymphoides*. For *Nymphoides*, so far as habits are concerned, is a water lily in miniature. Moreover, it agrees with the Nymphaeaceae in possessing the stellate idioblasts in the intercellular spaces of the petiole so characteristic of that order. Goebel found, in studying the allied species of *N. indicum*, that the long stalk given off from the rhizome appeared to bear both laminae and flowers. He showed, however, that this long stalk is the axis of the inflorescence, the short segment of leaf-stalk above the inflorescence being the petiole. (*Ann. du Jardin Bot. de Buitenzorg*, vol. ix., 1891, pp. 41-126.) The flowers appear well above the water and do not last for very long. To-day one blossom is out, but this will fade during the hours of darkness to be replaced next morning by another, and so on from day to day. During observations, carried out in the late summer of 1925, the writer found the flowers visited by minute Dipterous flies, and the small dragon-fly, *Agrion puella*, frequently rested on them. The floating leaves have a somewhat crinkled appearance at the edges and occasionally turn upwards, forming a saucer shape. The fading leaves change to a reddish hue before final decay.

Hydrocharis Morsus-ranae, the Frog-bit, is sporadic in Sussex, being met with much more frequently in the eastern parts of the county than in the western. Flowering is not general and possibly depends a good deal on weather conditions. It was noticed that during the hot summer of 1925 the plant flowered freely in many places with that freedom so common with some of the Batrachian Ranunculi. The growth is always luxuriant, in certain places choking the ditches and forcing individual plants almost right out of the water. *Hydrocharis* in Britain, at any rate, would appear no longer to require sexual reproduction, depending entirely on vegetative reproduction. In some localities it remains, season after season, flowerless. This would also appear to be the case when grown under artificial conditions. The writer had, for some years, a sunk tub in the garden into which was introduced *Hydrocharis*. The plants never produced a single flower during the course of some years, though such vigorous vegetative reproduction took place as to make it necessary to thin out the plants very considerably. During the summer of 1925 no insects were observed to visit the flowers. The flower is extremely delicate, and at the end of a day's ramble suffers from confinement in the vasculum. Flowers with six petals are occasionally found, and Ray mentions having found double flowers, very sweet-scented, in the Isle of Ely. But this does not appear to have been noticed since his time. (Deaken, *Florigraphia Britannica.*) In the ditches, where the Frog-bit grew rampant, quite a considerable amount of heat was generated, and the water registered at 3 p.m. on a day when there had not been much sunshine, about 90 degs. Fahr. Plants brought home and placed in a vessel of water on August 9th, 1925, developed turions or " winter buds " on the 29th. Microscopic sections of these showed well-developed starch grains. The turions remained clinging to the stolons until early in October, when they became detached owing to the decay of the stolon, and sank to the bottom of the water. The turions are of a dark green colour and resemble the leaf-buds, only, instead of rising above the water, remain submerged. With its vigorous growth it might be expected that *Hydrocharis* would be more widely spread than it is, for it cannot be called a common plant anywhere. The cleaning of ditches—its favourite haunt—destroys quantities of turions, and anyone who has seen how thoroughly some of the ditches in Sussex are cleared out will realise that under such conditions the Frog-bit has little or no chance of surviving in these places. There was one locality in West Sussex where the plant formerly grew abundantly, but not one can now be found as the result of the ditches being cleared. The water in which *Hydrocharis* grows is still, with practically no flow, and the turions have no opportunity of being carried to fresh situations except, perhaps, in times of severe floods.

Elodea canadensis, unlike *Hydrocharis*, is frequently found in waters with a considerable flow. The plant possesses such rapid powers of reproduction that the smallest piece is capable of sending out roots in the mud, wherever it may happen to rest. *Elodea* has not, as is the case with *Hydrocharis*, to depend alone on turions for perpetuation. In some ditches in West Sussex, where cleaning is rigorously resorted to, this does not appear to have any appreciable effect in checking the growth, and it is well nigh impossible to exterminate the plant. So far as observations in Sussex go, *Elodea* is very erratic in flowering, and hitherto only female flowers have been found. At Henfield, in West Sussex, *Elodea* was observed to flower freely during June 1922, the blossoms literally covering the surface of a still-water ditch. During 1923 and 1924 no flowers were found. Free flowering took place again in 1925 in a ditch in East Sussex.

EGYPT AND PALESTINE.

By G. Claridge Druce.

It did not appear unseemly that a botanist should celebrate his fifty-second " collecting " year and his seventy-fifth of actual age by making an expedition to the Holy Land, so, after paying a delightful visit in January to Stansteadbury to witness the phenomenally early flowering of *Conium*, and to see the beautiful Crocuses at Middleton in the garden of Mr T. A. Bowles, and to Westonbirt to enjoy once again the charming hospitality, and be dazzled by the wonderful display of Orchids in March, in company with my young friend, Mr T. Churchill, I set out for the East, travelling in a most comfortable wagon-lit compartment from Calais to Trieste. Then after a night's rest we got on board the luxurious Lloyd Triestino boat, Tevere, and in halcyon quiet and weather we set out for Alexandria, having on our way pleasant views of the Dalmatian coast, of the Albanian mountains, glimpses of Corfu, the Grecian coast, and Crete. We were so close to the latter that I was able to recognise some plants with the aid of a glass. The landing at Alexandria was not unduly troublesome, and we reached Cairo in time to have lunch at Shepheard's Hotel. In Cairo we saw the wonders from Tutankhamen's tomb, some most elegant alabaster vases even outvying in beauty the golden chariot and jewels. We saw honey over 3000 years old, and the dried wine-lees of the same date. We are indebted to Mr Denham for so kindly acting as cicerone to the Museum.

I had time to run out to Heliopolis and the desert country and to collect about a hundred species, seeing a hyena on the prowl and sand grouse on the wing. Among the plants noted were *Chrysanthemum Coronarium*, *Peganum Harmala*, *Sonchus oleraceus*. var. *triangularis* Dum., *Trifolium alexandrinum*, *Argemone mexicana*, *Carthamus tinctorius*, and *Chenopodium murale* as a very small leaved form. We then went up the Nile to Luxor in order to see the Temples of Karnac, Luxor, the Ramesium, and the Valley of the Kings and Thebes. Space, however, does not allow of a description of the Temples—already amply done. The pleasure of the visit was greatly enhanced by the luxurious accommodation at the Winter Palace with its large and delightful garden. A couple of hoopoes perched on my balcony.

One of the features of the country on the Theban side of the Nile was the fields of *Papaver somniferum* which is cultivated for Opium We saw it being collected by women and children. Several transverse incisions are made one day, and the next the exuded and partially inspissated juice is scraped off with a blunt knife. A strikingly beautiful grass is *Imperata cylindrica* with its large silvery spikes, but vegetation in this area is sparse. The barley fields were newly cut, and the sugar canes were being gathered, so it was an arid country at the entrance to the Valley of the Kings. The heat was so intense that we were glad to go into the subterranean regions to see the tomb of Amenophus II. of the 16th dynasty, which was opened in 1898. The colour paintings were brilliant, and his mummy was quite dignified and in excellent condition of preservation. The tomb of Seti I. (19th dynasty), which was opened by the Italian Balzanai in 1820, we also explored, but it had been despoiled of its treasures long before 1820. The tomb of Rameses VI. (12th dynasty) was also, with some others, inspected. After lunch, the temple of Der el Bahri (built by Queen Hatshepi) proved especially interesting owing to its vivid representations of plants. We had tea with the Egyptologist, Mr Davis, and saw tombs of less exalted people, that of a gardener among the rest. The sky, which had hitherto been cloudless, took on a duller tint, but there was no cloud. There were howling noises in the air as a sand-storm blew up, its gusts coming like blasts from a furnace, covering and blinding us with dust, so we had ignominiously to turn our backs to it and seek refuge in our carriage. The horses had a bad time as we crawled through the storm to the Nile. Fortunately the blasts came on our backs or we might have had to pass the night on the Theban plain. Indeed, some other travellers behind us did not reach Luxor till after midnight. Even the journey across the Nile was sensational. To our parched throats the iced lemon squash was a nectarial beverage. By the morning the storm had passed so we again crossed the Nile to visit the statues of Memnon, representing Amenhotep III., at the entrance to the great burying ground. which was an imposing feature in the scene. My friend, Canon Sayce, once climbed up an all too short ladder on to the lap of the god and, on trying to descend, found himself in a queer fix, as he had to drop from the slippery knee on to the rung of the ladder. Had he missed it, the result must have been disastrous, as the distance to the earth is considerable. The Ramesium was most impressive, especially the gigantic fallen figure of granite, 70 feet high, now broken, which had been hewn out of the quarries near Assouan. It had been conveyed to the Nile, brought down the river, with all the difficulties of its navigation, and then dragged about seven miles to this place. One shuddered at the thoughts of the suffering of the slaves who had to do the manual labour involved in such a journey.

We also made an expedition to the Pyramids and the Sphinx ere we entrained in the evening for Kantara on the Suez Canal. Crossing it we got into our wagon-lit for Jerusalem. At Ludd, however, about six in the morning we had to change trains, but we were in Palestine and eagerly noting every plant we could see from the train. We entered Jerusalem by the Jaffa gate, being met there by our dragoman, who in the morning went with us to see the motor car we had engaged for our Palestine and Syrian expedition. I was so anxious to see the plants that we drove out to Bethlehem where, having seen the Church of the Nativity, the oldest church in the world, the site of the manger having been known for more than 18 centuries, and the spot, now occupied by a Franciscan Church, whence the Holy Family started on their flight to Egypt, many interesting species rewarded us.

The country round Jerusalem is arid and stony, almost grassless, but there are olive groves still existing, and a rampant growth of prickly pear on the slopes from the city walls, with *Hyoscyamus albus* and *aureus*, and a great variety of Crucifers, Boraginaceae Leguminosae, Compositae, and Labiatae. We had with us that excellent Flora by the Rev. G. E. Post, which contains the descriptions of 850 genera and 3500 species as compared with the British 560 genera and 2000 species. The area involved is, however, the most wonderful in the world, taking its historical associations, and its botanical, geological, and geographical features into account. The highest point of the Lebanon is 10,220 above, and the Dead Sea 1300 feet below, the Mediterranean. It comprises only about 50,000 square miles, or less than half that of the British Isles (England, 50,823; Wales, 7,362; Scotland, 29,819; Ireland, 31,760=119,764) which is evidence of the much greater richness of its flora, especially when one remembers that the plants have not been so intensively studied as those of the British Isles. The standard of species, too, is of a higher grade. Again the comparative paucity of the Gramineae, Cyperaceae and Juncaceae, which are so numerous in Britain, as against the brightly coloured families which are dominant in Palestine give to the country a glorious effect of colour which alas is too fleeting for the lack of humidity causes their flowering time to be short. During the greater portion of the year aridity and barrenness reign supreme. However, we were there when the flowers were in their glory. Around Bethlehem we noticed *Adonis* in variety, as also *Papaver Rhoeas*, but differing from British species, *Fumaria micrantha*, *Vogelia paniculata*, *Asperula arvensis*, *Odontospermum aquaticum*, *Veronica Cymbalaria*, *Podonosma syriacum*, *Bromus tectorum*, *Poa bulbosa*, *Capriola* and *Panicum sanguinale*.

Returning by Rachel's Tomb we had time to see the Church of the Holy Sepulchre, which indeed during our stay we daily visited and were present at the Easter Sunday Service. On Saturday I went to the Installation of the W.M. into the Chair of King Solomon—a very impressing ceremony performed in the Chapel of the Knights of St John, and at the banquet had the honour of responding to the toast of the Grand Lodge of England. The W.M. was Mr Mavrogodarto, and the I.P.M., the very popular Sir Gilbert Clayton. The building which most attracted us in Jerusalem was the magnificent Mosque of the Dome of the Rock, surely one of the six most striking temples in the world, dating from the seventh century. It was restored in 913, again in 1187 and 1327, the beautiful western doors being added in the sixteenth century. At this time (1561), too, were added the brilliant porcelain tiles which cover the dome from the window-sills upwards. The 36 glorious windows are probably of the same date. They render the interior somewhat dark, but they give a more dignified effect which is enhanced by the rich mosaics dating from the tenth century. The floor is covered with magnificent carpets. In the centre is the Sacred Rock, from which the Mosque takes its name—which is very near to, if not actually on, the site of the temple of King Solomon. The Mosque stands in a spacious stone-paved square; the Threshing Floor from which good views are to be obtained not only of the Mosque but of the city and country round. In the interstices of the pavement grew *Lepidium perfoliatum*, *Bursa patagonica*, *Holosteum umbellatum*, *Lamarkia aurea*, *Polycarpon tetraphyllum* and *Spergularia atheniensis*. The Mosque both inside and out presented an air of delicious calm and rest, a place to which one could return again and again. A glorious day was spent in driving from Jerusalem down one of the arid waddis to the Dead Sea, a descent of about 3500 feet for the city stands over 2000 feet above sea level (Mt. Zion is 2535 feet) and the Dead Sea, 46 miles long by 9½ miles broad in its greatest measurements (about 500 square miles), occupies a depression in which the water stands at 1300 feet below the level of the Mediterranean. It has no outlet although it receives the Jordan and half-a-dozen other streams. We left by the Jaffa Gate, but skirted round by the Damascus Gate and the Garden of Gethsemane, ascending the slope of the Mount of Olives and then turned to Bethany, situated in cornfields, and rapidly descended into the Wady el Hand and by the inn of the Good Samaritan. In one of the arid valleys an extraordinary Broom Rape (*Cistanche lutea*) attracted our attention. It was more than a foot high, very fleshy in consistence and of a pure lemon yellow. Eventually we reached the sea-level and drove over the rough sand to the water's edge. The characters of the water and of its aspect have been so often described that one need only say that of vegetation there is practically none. We drove over the sand, where the Rose of Jericho is to be found, for some distance till we reached the Pilgrim's bathing place in the Jordan, here a turbid stream with *Arundo Donax*, *Acacia Seyal*, *Zizyphus*, and *Tamarix* on its banks, and saw the crowd of pilgrims performing their not unneeded ablutions. We then drove on to Jericho, passing by Elisha's Fountain, where one has a memorable view of the Mountains of Moab and Gilead and the Dead Sea. Westwards is the Field of Temptation; in the east are Moab and Edom with Nebo and Pisgah soaring above them; northward the Jordan looked upon by Gilead and Bashan, while below us in the foreground is Jericho's green oasis which extends to Gilgal and the Jordan. Many were the plants we gathered in this limestone ground

Bryonia multiflora, *Ecballium*, *Pisum humile*, *Ononis Natrix*, *Fagonia glutinosa*, *Erucaria aleppica*, *Capparis galeata*, *Pluchea Dioscoridis*, *Filago spathulata*, *Hippocrepis unisiliquosa*, *Caylusea canescens*, *Ruta bracteosa*, *Euphorbia arguta*, *Chenolea arabica*, *Coronaria*, *Achillea micrantha*, purple *Echium* and *Salvia*, *Podonosma syriacum*, quantities of white flowered *Anthemis* and *Anacyclus* and *Caucalis daucoides*, *Paronychia argentea* (which is used as tea) and *Scandix* were present. On the rocky slopes were glorious tufts of Cyclamens and the pale purple-flowered *Linum pubescens*, phlox-like in appearance. The large yellow flowered *Linum flavum*, the striking flowers of *Erodium gruinum*, and the pretty *Geranium tuberosum* were also present and very locally the Spider Orchis, *Ophrys sphegodes*. *Silene Atocion*, with its pretty flowers, was a good representative of the Caryophyllaceae as was *Saponaria Vaccaria*. Here, too, was *Silene conoidea* (quite different from the Jersey plant, so called). Locally we saw the showy *Althaea acaulis* which, like our *Cirsium acaule*, has a stemmed form, and *Althaea hirsuta*, *Lavatera cretica* and *punctata* were noticed. *Ononis Natrix* was quite beautiful. Among other plants were *Melilotus indica*, *Trifolium angustifolium* a beautiful species, *T. alexandrinum*, *T. stellatum*, *T. resupinatum*, *T. tomentosum*, *Circinnus circinnatus*, *Coronilla scorpioides*, *Trigonella lilacina*, *Securigera Coronilla*, *Lotus Tetragonolobus*, *Onobrychis Caput-galli*, *Vicia hybrida*, *V. lutea*, *Lens Lens*, *Lathyrus Aphaca*, *L. hierosolymitanus*, *Tordylium*, *Bifora testiculata*, *Gnaphalium luteo-album*, and the splendid dark crimson *G. sanguineum*, *Chrysanthemum segetum*, *Senecio vernalis*, *Calendula arvensis*, *Cirsium Acarna*, *Notobasis syriaca*, *Crupina*, *Lactuca saligna*, *Centaurea Verutum*, *Urospermum picroides*, *Crepis aspera*, with its snowy white pappus, *Campanula Rapunculus*, *Legousia Speculum*, *Cynoglossum pictum*, *Anchusa italica*, *Convolvulus althaeoides*, *Trixago Apula*, *Orobanche speciosa*, *Micromeria nervosa*, *Salvia Horminum*, *S. viridis*, *Teucrium Polium*, *Phlomis viscosa*, *Convolvulus siculus*, *Ruta Buxbaumii*, *Stachys neurocalycinum*, *Ajuga Chia*, *Gladiolus segetum*, *Smilax aspera*, *Asparagus acutifolius*, *Asphodelus fistulosus*, *Stipa tortilis*, *Avena sterilis*, *Echinaria capitata*, *Kochleria phleoides* and *Poa bulbosa*, a wonderful day, an Easter offering rich indeed.

The hotel was very comfortable and the view from the hill above such historic ground was especially beautiful in the evening light as it included Mount Tabor gilded by the sun. The Church of the Annunciation and the Virgin's Well were visited, and we passed through the narrow streets, with the carpenters' shops, little changed in character in the last twenty centuries. The next day we motored through most attractive scenes and scenery to Cana of Galilee and the Valley where the Crusaders met their final defeat by Saleh el Din near the Horns of Hattim, and then reached Tiberias, enjoying on the way a glorious prospect of the Lake and the distant hills, those on our left for miles being covered with pale blue *Echium* and *Anchusa.* We motored to the end of the Sea of Galilee, which is fourteen miles long by six miles wide, to where the Jordan issues, and found in the shallower places large quantities of *Ranunculus sphaerospermos*, identical with our Oxford plant. *Papyrus* grows by the Lake which was fringed for some distance with a luxuriant growth of *Oleander* then in full flower. Every few yards demanded a halt. Our chauffeur had been told by our Dragoman that we were a little mad about flowers, but his views were that little was not the word to use. The strikingly beautiful Umbellifer, *Artedia squamata*, with the flowers of *Tordylium* and the foliage of *Meum* was common, and there were bushes of the snowy white-flowered *Salvia spinosa*, the blue racemed *S. verticillata*, the striking tufts of *Morina persica* and *Linum strictum*, *Peganum Harmala*, a hybrid apparently of *Bursa rubella*, the noble *Acanthus syriacus*, *Bupleurum nodiflorum*, *B. protractum* gilding the ground with its yellowness, *Caucalis leptophylla*, *Phagnalon Tenorii*, *Veronica syriaca*, *Campanula hierosolymitanus*, *Trifolium agrarium*, *T. xerocephalum*, *T. clypeatum*, *Andropogon pubescens*, and the lovely grass, *Pennisetum asperifolium*. The view across the lake was very memorable. The cliffs down which the Gadarene swine rushed to their fate were shimmering in the distance, and later on in the evening under the clear starry sky—the scene was fairy like. An early start was made from Tiberias, to which a very reluctant good-bye was said, for what place is so linked up with tradition, or so remarkable for its delightful beauty, and for its extraordinary geologic and archaeologic interest. Our first visit was made to Capernaum, but many halts were made on the way. In a marshy spot we met with *Lythrum meonanthum*, *Cyperus longus*, *Scirpus maritimus*, *Ranunculus muricatus* and *R. sardous*, also *Celsia*, *Anchusa undulata*, *Ononis pubescens*, *Melilotus messanensis*, *Medicago coronata* and *Aegilops ovata*. We stopped at Bethsaida and found about Capernaum many interesting species. We descended by a steep and bad road to the Jordan—the scene after we had left of a very bad motor accident. We turned sharply over the bridge, where it is said Jacob crossed the Jordan, and then up an equally steep ascent for the most part over boulders, as the track was in the process of making. The Jordan here is very near its source from the waters of Merom. By its side we saw *Trifolium resupinatum*, *T. alexandrinum*, *T. nervulosum*, *T. spumosum*, *Ononis pubescens*, and the hills stretching beyond us into Syria were blue with *Echium* and *Anchusa*, which showed their colour five or six miles away. We soon ascended to about 3000 feet and had lunch on a flowery plateau overlooking Lake Huleh with its pelicans and wild duck, and yellow and white water lilies. All about us in the arid soil were tiny plants of *Scleranthus verticillatus*, *Valeriana truncata*, *Thlaspi perfoliatum*, *Biscutella*, etc.

The time sped all too quickly, and we motored on to the Customs House near Caesarea Philippi, the modern Banias, where we were not unduly delayed, but were enabled to add about a dozen plants to our list. We then motored over that famous and immemorial highway to Damascus, meeting now some camels laden with provender under the care of sedate and stately Arabs, or passing by a Bedouin encampment, or a Circassian village, and having for a rampart on one side the long snow-crested Hermon on which grows the wild wheat. Vast cornfields were on either side, separated by low stone divisions and havings among the peaceful spears of corn many delightful flowers. Here we found *Psoralea Jaubertiana*, *Salvia spinosa*, *Hyacinthus comosus*, *Ornithogalum narbonense*, *Vinca libanotica*, *Hyoscyamus reticulatus*, *Phlomis Nissolii*, *Silene longipetala*, *Achillea Santolina*, etc. Then we could descry in the far distance the white minarets of that very ancient and celebrated city of Damascus, but the approach by road does not give the best idea of its beauty. We passed through miles of fruit trees—Apricot, Peach, Cherry, Fig, Mulberries, Plums, and Pears, growing beside the clear waters of Abana and Pharphar to the Syrian city which was still reverberating with the Balfourian excitement. There we had a day or two sight seeing of Bazaars, the Street called Straight, the Tomb of Saladin, where we found *Lepidium perfoliatum* and *Bursa rubella*, the splendid Mosque where it is said John the Baptist's head is preserved in a golden casket. It was fortunate we saw the beautiful house and its contents as, since we were there, it has been destroyed by gun fire. At our hotel we met Lord and Lady Edward Gleichen who accompanied us on a journey to the Antilebanon where we found the beautiful *Gladiolus atroviolaceus*, *Allium neapolitanum*, *Ajuga orientalis*, *A. Iva*, *Onosma sericeum*, *Lamium moschatum*, *Androsace maxima*, the very pretty Umbellifer, *Chaetosciadum trichosperma*, *Fumaria arabica*, *Viola parvula*, *Silene conoidea*, *Alyssum montanum*, *Stachys graveolens*, etc. We also went to the hills above Salahigeh whence a glorious view of the city is obtained showing the truth of the simile " a diamond set in emeralds " since the white minarets and buildings rise over a sea of foliage and the eye ranges over miles of green trees or fruit blossoms. And there was Hermon the proud with its snowy coronets. A very pleasant expedition was made to the Lakes where we got *Ceratocephalus falcatus* and all too soon came the time to depart for Baalbec by a pleasant road to Shtoura where we lunched and had some good Lebanon wine. There were coppices near in which many interesting plants grew. We found the strange looking but sweet scented *Arum palaestinum* and *A. hygrophyllum*. Our course then led between the Lebanon and the Antilebanon ranges, both attractive. In the upland fields we gathered *Leontice Leontopetalon*, a solitary Tulip, *T. Oculi-solis*, *Onosma giganteum*, *Anchusa strigosa*, *Ornithogalum narbonense*, *O. lanceolatum*, *Muscari comosum* and *M. racemosum*, and the remarkable *Prunus* (*Amygdalus spartioides*), the nearly leafless branches being covered with pink flowers. Here and there were solitary storks slowly quartering the fields for animal food, and then, lighted up by the declining sun, the golden temples of Baalbec came into view, while the scent of Hawthorn came to us from some bushes near to the entrance of the town. At the comfortable hotel we had a peaceful time. The Temples, even after those of Karnac and Luxor, maintained their claim, and fully came up to our high expectations. All about them were rivulets of water and much interesting vegetation. *Roemeria* *hybrida* grew on some wall tops. Near the stone quarries there is an immense block of stone, nearly sixty feet in height, not yet separated from its matrix where it was left unsevered 2000 years ago. In the fields near grew *Crambe Aucheri* and *orientalis*, *Aristolochia paecilantha*, *Taxiera glastifolia*, *Malcomia Chia*, *Caucalis leptophylla*, *Linaria chalepensis*, *Salvia acetabulosa*, *Phlomis viscosa*, *Holosteum linifolium* and *Legousia pentagonia*. Had time permitted (and why did not one make it permit?) one would have gone on to the " Rose red city half as old as Time," but alas our passage was booked so we motored on up the slopes of Lebanon, through delightful scenery, to the picturesquely situated town of Zahle built upon terraces on both sides of the steep gorge of the " Coldwater," a rushing mountain stream (like an alpine torrent) from the Lebanon. The inhabitants are mostly Christians. We took a walk up the gorge meeting in the vicinity of the town with *Barbarea minor*, *Bupleurum libanoticum*, *Kentranthus longiflorus*, *Phlomis chrysophylla*, *Ajuga Iva*, *Zizyphora capitata*, *Poa diversifolia*, var. *crassipes*, *Veronica syriaca*, *Centaurea Meryonis*, *Valerianella echinata*, *Galium judaicum*, *G. coronatum*, *Malcolmia africana*, *Cerastium dichotomum*, *Astragalus galilaeus*, *A. calichrous*, etc. The walk by the rushing stream was brought too soon to an end by a violent thunderstorm and torrential rain, which continued for some time. When we looked out from the window in the morning the country round was snow-covered, which promised a cold drive even if it did not prevent one from getting over the Lebanon Pass between Jebel Keneisch and Jebel el Baruk. However, we tried, and though the hair-pin bends on soft snow were not the safest of travelling methods, we pushed on through magnificent scenery and in intense cold until Mudeirij was reached where I got a bright yellow-flowered *Alyssum*. Just over the top of the col the snow was but little in evidence so we did some rock searching and saw in abundance the white-flowered *Arabis* of our gardens, *A. caucasicum* (*A. albida*). There too was *Barbarea minor*, *B. plantaginea*, *Aubretia libanotica*, *Lamium striatum* and probably *Cerastium inflatum*.

Here the scenery was sublime. We were amid snow peaks, and all about the lower hills were numerous villages some " perched like a swallow's nest on the eaves " of pointed hills, while numerous pencilled valleys descended to the foot hills, and beyond glistened Beyrout bordering the purple wine-like sea. We had left behind us the biting blasts but our chauffeur and dragoman were obdurate about reaching the Cedars, as the snow was so deep, so we had to get something of our own back by very frequent descents from the car to the paradise of plants that were about us. What an immense variety there was! Myriads of Cyclamens and here and there the wonderful Labiate, *Eremostachya laciniata*, with its stems and pedicels as it were wrapped against the wind in the whitest of wool, and there were *Mollucella spinosa*, *Salvia hierosolymitana*, *S. Horminum*, *S. viscosa*, and *Orobus variabilis*. Rarely has one had a more delightful drive or a greater gathering of plants. From Beyrout we motored out to the gorge of the Dog River where there is a Roman aqueduct still bringing down water from the hills, its arches in some cases being against the cliff-side, and then they were filled with *Asplenium Capillus-veneris*. Here we found *Geranium purpureum*, *Orchis coriophora*, *O. pyramidalis*. *Orobanche lavandulacea*, *Briza minor*, while *Vicia peregrina*, *Isatis aleppica*, *Anthyllis tetraphyllos*, *Rosa phoenicea*, *Genistae*, *Cytisi*, and other bushy Leguminosae were in evidence, and there were Cisti and many Labiates. *Salvia hierosolymitanus*, *Pimpinella peregrina*, *Onosma frutescens*, *Trifolium clypeatum*, *T. pilulare*, *Filago spathulata*, *Ononis hirta*, *Vicia palaestina*, and *Teucrium lamiifolium*. From Beyrout we determined to drive along the coast to Haiffa by the way of Sidon, Tyre and Acre. The weather was glorious, the road for almost all of the way was in sight of the sea, and it was up and down rocky prominences, the French Corniche road as yet unspoiled. We passed by pleasant villages and olive and orange groves. The vegetation was ever varying, but always of interest. Sidon lies embowered in orange trees laden with delicious fruit and there were Lemons and Loquats also on sale. In some places there was a great quantity of the pretty Crucifer, *Ricotia Lunaria*, with its pretty bluish flowers and its ripe pods resembling those of Honesty. In other places there was a purple pall where *Limonium sinuatum* grew appropriately enough near that coast where the purple *Murex* was formerly obtained, and there were places silvery white as with hoar frost with *Paronychia argentea*, or in others covered with the velvety *Medicago marina*. We also gathered *Vail-*

lanthia hispida, *Biscutella Columnae* and *Enarthrocarpus arcuata*, of which but little was left but the silicles.

Tyre was also in the midst of Oranges and Palms. Here, on a headland, we got the curious *Plantago cretica*, as well as *Trifolium xerocephalum*, and *Centaurea arenosa*. We had passed by Sarepta where Elijah lodged, the tomb of St George, and several rivers before reaching the cheerful town. Leaving it by a hilly road we reached the great plain of Acre crossing the river Kishon. Taking to the sands, with the waves washing our wheels, we sped merrily along, seeing two huge dead turtles thrown up by the waves, and then reached Haifa nestling at the base of Mt. Carmel; a busy town, and what may some day be the chief feature in a great haven. We ascended Mount Carmel, 1810 feet high, amid a myriad of delightful plants. The air was redolent of Rosemary, Lavender, Cistus and Myrtle. A striking species was *Teucrium rosmarinifolium*, and there were *Stachys palaestina*, *Bupleurum Fontanesii*, *Lagoecia cuminoides*, *Satureia Thymbra*, *Valerianella discoidea*, *Linum flavum*, *L. pubescens*, *Rubia Oliveri*, *Spartium junceum*, *Salvia triloba*, *Campanula strigosa*, *Legousia Speculum*, *Lotus Tetragonolobus*. as well as masses of wild Hollyhocks. The view was most beautiful—the coast with its numerous headlands, the great plain of Esdraelon, the mountains of Samaria and Galilee, and in the distance the snow-topped ridge of Hermon. Afterwards we motored along the road towards Jaffa. This never-to-be-forgotten day fitly terminated our Palestine journey, and we retraced our way to Cairo, and then sailed from Alexandria to Venice, alighting for a short time at Brindisi, then en fête to welcome our Air Minister, Sir Samuel Hoare, who was on our ship. As a pleasant compliment to Britain the native Government sent an escort of seven seaplanes to Brindisi, where four more came out and did their spectacular evolutions in the air above and around us. The R.H. L. A. Amery, Bishop Gore, Lord and Lady Edward Gleichen, and Mr Howard Carter were fellow-passengers on the very pleasant journey, and after a fleeting glimpse at St Marks at Venice we entered the wagon-lit and journeyed straight through to Oxford, having had one of the most enjoyable—if expensive—journeys I have ever experienced.

NORWAY AND SWEDEN.

By G. Claridge Druce.

After motoring round northern Scotland in early August Mr and Mrs Williamson, Mr Churchill and I sailed from Hull to Oslo, and there Mr Williamson hired an eight cylinder Cadillac and chauffeur to drive us through Norway and Sweden. The season was a little more advanced than on our last visit. The drought had hastened on vegetation so much that the country was much less flowery than before. We drove from Oslo through pretty country to Honefoss and on to Fagernes, about 200 kilos, seeing on our way *Calla palustris* in good flower, and *Hieracium umbellatum* looking very ornamental and different in facies from our plant. *Anthemis tinctoria* is often an adventive plant following the railway. Then we drove through beautiful scenery by Gjovik on the lake to Lillehammer where there are some fine waterfalls, on to Otta, where we got *Nymphaea pumila*, Dombaas and through the Dovrefeld to Kongsvold. On this journey many of the rarest alpines were noted, including *Arabis alpina*, *Arenaria uliginosa*, *Carex atrofusca*, *C. Lachenalii*, *C. alpina*, *C. cespitosa*, *C. atrata*, *C. pauciflora*, *Eriophorum alpinum*, *Gentiana suecica*, *G. lingulata*, *Phyllodoce caerulea*, *Capsella gallica*, *Cardamine bellidifolia*, *Lychnis alpina* and *Stellaria calycantha*. One may say that although *Sagina saginoides* was noticed in several places one could not find *S. scotica*. Kongsvold is over 3000 feet in altitude, and it was bitterly cold. The plants there had suffered much from the drought. A pretty full account was given in *Rep. B.E.C.* 786, 1922, of this area, and we saw most of the plants noticed then, including *Saxifraga cespitosa*, *S. cernua* (in good flower) and *Carex atrofusca*. *Poa laxa* grew close to the roadway, and the moors were a wonderful sight of alpine willows. *Salix glauca*, *S. lanata*, *S. hastata* and *Betula nana* were pre-eminent. *Aconitum septentrionale* was past its best, but the alpine Hieracia were in great show. The rare alpine, *Poa jemtlandica* Almq., was found in small quantity, also *Erysimum hieraciifolium* and *Chaerofolium sylvestre*, var. *angustisecta* Druce. Near Hjerkin grew *Gentiana islandica*, *G. lingulata*, *G. tenella*, *Poa arctica*, *Agropyron viola-*

ceum, *Poa alpigena*, etc. In the Valley of the Driva, as later on at Merok, I saw *Caltha radicans*, not hitherto recorded in the Norge Floras. There, too, was *Diapensia lapponica*. We had neither the time nor the energy to climb Snaehatter, which is a prominent object in the view from Kongsvold. We then retraced our way to Dombaas, and went down the Romsdell Valley to Aandalness, and to the Isfjorden for the glorious view. We saw the car driven down two planks to the small steamer only about as broad as the car was long, with the level of the water four feet below the pier. This being dexterously managed, we went to Vestnes and drove to Soholt where *Carex maritima and Arnica montana* grow. The car was again put on a boat to take us to Geiranger. There grew *Mulgedium* and *Saxifraga Cotyledon*, both over flower, but *Caltha radicans* and *Juncus alpinus* were obtained. We drove by Merok to the glacier-pass in glorious weather. The mountain slopes near the ice were covered with myriads of Hieracia, the alpine sections being well represented, and *Ranunculus glacialis*, *Gentiana nivalis*, *Veronica alpina*, *Agrostis borealis*, *Poa laxa* and *Silene acaulis* still in flower. Descending by the wonderful road we reached Hjelle and then followed along the lakes to Loen, gathering *Mentha gentilis*, a rare Norge plant, on our way. We had a glorious day at Loen, but obtained nothing new. *Epilobium collinum* was mostly over flower, but we saw much *Woodsia ilvensis* and *Asplenium septentrionale*. We drove 90 kilos up the glacier pass to Grotli where *Cerastium cerastioides* and *Gnaphalium norvegicum* were in profusion. The moors were covered with *Rubus Chamaemorus* in splendid fruit, and delicious it is when it is quite ripe.

We had a very long run from Grotli to Otta, and slept at Dombaas from the hotel of which a wonderful view is to be obtained. The next day we went over the Dovrefeld a second time and were enabled to gather a *Draba* which I noticed from the train three years before. It proved to be very robust *D. incana*. *D. rupestris* is much larger than the Ben Lawers plant. In the Driva Valley we found *Rumex arifolius* and *Veronica longifolia*, the latter quite naturalised on a hill slope. We reached Trondhjem in time for dinner, the scenery being delightful the whole way. Here we spent a day or so, and then started for Sweden by driving along the Fjord by Levanger (88 kilos) to Storlien, the border town. The border summit is 850 m. above sea level. We at once began making a list of plants noticed. It was new country to me for, with the exception of Poland and Russia, all the other European countries have been visited. The first 100 species were a foretaste of what we saw for the next week or so. They included *Cornus suecica*, the bright red berries of which were a great ornament in the woods, *Linnaea*, *Pyrola secunda*, *Vaccinium Vitis-idaea*, *Gnaphalium norvegicum*, *Rumex arifolius*, *Saussurea alpina*, *Rubus saxatilis* and *Antennaria dioica*.

Near Foss we found *Gentiana suecica* in good bloom. Our way led through such vegetation till we reached Are where there is some cultivation We found a very comfortable hotel—or rather several of them, under the same excellent management. We dined in one and slept in another, both scrupulously clean, with good attendance and food. This is true of almost every place we visited. Are is a great country for alpine work, especially the mountain Areskutan. Then we had over a 200 kilo drive through Jamtland. We passed by lakes and through spruce forests by Morsil to Ostersund, beautifully situated on the lake, seeing much *Betula nana* on our way. From an adjacent eminence the view comprises an area larger than the whole of Switzerland and more than twice that of Wales. Then we went on to Ange through wild country. Indeed at one time it seemed we should have to stay all night in the forest for the road had dwindled to a track. Here for the first time I saw *Sysimbrium araneosum*. Near Ange we saw plenty of *Carex cespitosa*, also *Lycopodium complanatum*, *L. annotinum* and *Juncus alpinus*. Then we journeyed 170 kilos by the river Ljungen, with a large electric power station worked by the side of the falls, passing into the desolate wilderness of Halsingsland, and by Lake Vaxman, we reached Ljusdal. *Lysimachia thyrsiflora* was common by the lakes and, as the dry season had much reduced the water, there was a foreshore attractive to visit, for *Ranunculus reptans* was abundant, *Elatine* (local), *Subularia aquatica*, in thousands, making a sward. It was rather remarkable that while *R. reptans* was so common, I did not see *Flammula* till about the ninth day. Keeping near the river we reached Bollnas passing through attractive scenery. From this place it is 200 kilos to Upsala. Through the trees of a spruce forest one could see a moor showing a yellowish-green tint which demanded investigation. We found it fringed with *Ledum palustre* past flower, but fruiting in abundance. It was a sphagnum moor which the dry weather allowed one to walk on in safety. It seemed as if bushels of red currants had been scattered over its surface—this was fruiting *Oxycoccus*, and there was plenty of *Carex magellanica* and *C. limosa*, but the conspicuous yellow colour was due to fruiting spikes of *Scheuchzeria*, which was there in hundreds of thousands. One will never see such a sight again. *Andromeda Polifolia* and *Calamogrostis arundinacea* were frequent as in many other parts. We stopped at an important town Gafle, the oldest town in Norrland, with pretty public gardens. On our way we gathered *Campanula patula*.

Nearing Upsala the country became cultivated, and it was with some botanic thrill we entered the town of Linnaeus, a delightful old-world town situated in a level and fertile plain with the river Fyris flowing through its streets. There is a capital hotel, the Grand Royal. Close by is the great Gothic Cathedral (A.D. 1260-1435), where we saw the monument of the great botanist with a bas relief and the inscription "Carolo Linne, Botanicorum Principi amici et discipulo MDCCXCVIII." The Botanic Gardens were visited, in which we saw much of interest. In the University Library we were glad to be able to see in a conspicuous show case the copy of the "Dillenian Herbarium" with a suitable inscription which was sent by the University of Oxford to Upsala on the celebration of the bicentenary of Linnaeus. The courteous librarian pointed out its beautiful binding as it rested in the show case, which at my request he opened—and as I had it in my hand he remarked to my friend that I seemed interested in it—"Yes," was the reply, "you see he was one of its authors." It was a delightful city, and on one of the walks up to the Carolina Park we saw on a hillock *Silene nutans*, *Potentilla supina*, and *Artemisia campestris* within the confines of the city—plants which Linnaeus himself probably saw there. In another direction we also explored one of his favourite areas. There we saw a *Sedum*, his *S. Telephium*, which is quite different from the British plant. It was associated with a curious jumble—*Asplenium septentrionale*, *Artemisia campestris*, *Phleum Phleoides*, *Veronica spicata*, *Scleranthus perennis*, *Bromus erectus*. *Herniaria glabra*, *Filago montana*, *Anthemis tinctoria* and *Carlina vulgaris*. We then drove on to Hammarby, the old dwelling-place of Linnaeus, now converted into a museum of things connected with the botanist, with some of his books and his clothes and his furniture. The garden contains such plants as Linnaeus grew there. Spreading on to the adjacent moorland was *Lilium Martagon* in fruit, and close by was *Centaurea Jacea* L., sub-sp. *angustifolia* Gugl. Not far away from Hammarby, on our way to Stockholm, was a wooded heath where there was a great quantity of the striking *Melampyrum nemorosum* with its beautiful contrast of orange-yellow and violet-blue blossoms. With it was *Pyrola secunda.* Through flatter country we motored to Stockholm where we were sumptuously housed at the Grand Hotel with its fine view of the harbour and of the Royal Castle opposite. Here we met our most esteemed honorary member, Emeritus Professor C. Lindman, who we were glad to see was recovering from his severe illness. We also made the acquaintance of Professor G. Sannerson, who added *Cerastium cerastioides* to the British Flora. He found it on Crossfell. The Botanical Institute is finely situated and splendidly equipped. There, too, we met Dr Dahlstedt, and in our hotel was Professor D'Arcy Thompson. Dr Lindman accompanied us on a delightful expedition to Saltsjobaden. There we gathered *Geranium bohemicum* and saw the leaves of the newly-described *G. deprehensum*, a recently separated species. We also saw *Arctium tomentosum* (which should be looked out for in northern Britain), *Sorbus suecica*, *Selinum carvifolia*, and *Anemone Hepatica.* Lindman also showed us two of his new Crataegi not as yet noticed in Britain, and we saw some delightful Dalecarlican children dances. We then determined to visit Dalecarlica and motored to Eukoping, Salan and Hedemora (about 200 kilos), where we got *Ajuga pyramidalis*, *Subularia*, *Juncus compressus*, *J. alpinus*, *Utricularia intermedia* and *vulgaris* and *Alchemilla pastoralis.* Then to Falun and to Rattvik, about 180 kilos. Falun is the chief town in Dalarne, celebrated for its great copper mines, worked as long ago as the 13th century. From them over fifty million pounds worth has been extracted. It is an extraordinary sight. On our way we got in Usgone Lake *Elatine*, *Limosella*, *Isoetes*, *Utricularia vulgaris*, *Herniaria glabra*, *Polygonum minus*, and *Nitella gracilis.* A quiet day was spent at the delightful hotel, Silkansborg, at Rattvik, at the head of the very large lake Siljian in very picturesque scenery. There we saw the small-flowered form of *Geranium sylvaticum*, *Galium erectum* × *verum*, *Polygonum viviparum*, *Cuscuta europaea* and *Salix pentandra*. From Rattvik we had a long drive of 228 kilos to Filipstad, passing through Ludvika on Lake Vessman, stopping for the night at Filipstad which is superbly situated.

Our last day in Sweden was spent in driving from Filipstad to Kill and Arvika on the Alga fiord, which is connected with Lake Vaner, and then to Charlottenburg, a delightful although very hilly journey, the switchbacks sometimes being very steep. Just before we reached our destination we saw some very fine specimens of the very beautiful fern *Struthiopteris*, also *Carex pallescens*, *Eleocharis acicularis* and *Alopecurus fulvus*. Leaving Charlottenberg in the morning, we passed the frontier and had a pleasing but uneventful journey into Oslo, where we had a very charming interview with Prof. J. and Mrs Holmboe at the delightful botanical gardens. These are splendidly equipped and there is a well-housed herbarium with laboratories.

EXPLANATIONS OF THE SALIX LIST IN THE LONDON CATALOGUE.

By John Fraser.

As the compiler of the list and the comital numbers of the Salices in "The London Catalogue of British Plants," eleventh edition, I have been asked to explain the differences between my list and those of the Rev. E. F. Linton and "The Cambridge Flora." The list was written entirely as a simple means of classifying the species, varieties, forms and hybrids of a complicated genus in the herbaria of collectors, and with this object in view, the names of the parents of each hybrid or supposed hybrid are written in alphabetical order; the varieties and forms are also written alphabetically. Both parents of a hybrid may have been the seed-bearer in turn, but in each case the hybrid remains the same, and likewise the name given it. The alphabetical order of writing the names does not invalidate nor confuse the hybrid in any way, and if this were universally observed it would sometimes prevent one and the same hybrid from being recorded or listed twice under the two names of the parents. The Rev. E. F. Linton followed the alphabetical order in his list in the tenth edition of "The Catalogue," so I make no claim to have invented it. If this fact is borne in mind, the differences between his list and mine will mostly disappear.

Some explanation is needed to account for the differences between the order observed in his "Monograph of the British Willows," and the list in "The London Catalogue;" but the author himself explains the more important differences in his book. With regard to the comital numbers, some figures appear within brackets, which are meant to indicate either that the county records are doubtful or that the Willows have been planted, or that the species are known or believed to be extinct in some counties. *S. daphnoides* and *S. pruinosa* are enclosed within parentheses to indicate that they are not natives of Britain. E. F. Linton omits *S. pruinosa* from his Monograph, or may consider it only a form of *S. daphnoides*; but it was the narrow-leaved Willow that was recorded from Great Ayton, Cleveland, and Wensleydale, North Yorkshire, by Messrs Ward, Mudd and J. G. Baker, in all the British Floras published between 1855 and 1874. *S. acutifolia* Willd. was the name most often used, but various others have been given. Wimmer, "Salices Europeae," p. 9, adopts *S. pruinosa* Wendland (1830). This makes a large spreading bush with long, slender twigs that bend or droop downwards with the weight of their own foliage. The leaves are always very narrow, linear-lanceolate, attenuate to a slender point, and regularly glandular-serrate or glandular-crenate. The bark in winter is reddish-chestnut or blackish-violet; and in summer is densely pruinose, almost white. *S. daphnoides* grows into the form of a tree 20-35 feet high, with much shorter twigs, more torulose, densely set with short, oblong or oblong-lanceolate leaves in summer, and with catkins in spring; the twigs are green, or reddish and less pruinose than in the other species. It is difficult to preserve these Willows anywhere near London, to which the public has access, on account of the beauty of the silky catkins, between November and March.

E. F. Linton has raised *S. Hoffmanniana* Sm. from the rank of a variety in the previous Catalogue to that of a sub-species under

S. triandra; and lowered *S. decipiens* Hoffmann to the rank of a sub-species under *S. fragilis* L. × *S. stipularis* and × *S. acuminata* are placed under *S. viminalis*, which was obviously one of the parents. The other is not so clear, though one can readily guess that the large size of the leaves and catkins of × *S. acuminata* is due to *S. Caprea*, while the striae under the bark would indicate *S. cinerea* as well. If I were to hazard a guess it would be such a cross as (*S. Caprea* × *viminalis*) × (*S. cinerea* × *viminalis*), leaving out of the question the seed parent in either case. × *S. stipularis* and × *S. acuminata* are therefore just where Smith left them at the beginning of the nineteenth century, except that the × denotes that they are hybrids and not true species. Another common Willow, frequently met with, is *S. babylonica* L., also described in the Monograph above mentioned, but no one would mistake this for a British species. Hybrids between it and *S. fragilis* and *S. alba* occur, but they also are planted.

With the above alterations and eliminations the British Willows just number eighteen species, many hybrids, a few varieties and forms, the two latter of which were described by Smith and Linnaeus as species. Dr F. B. White said, " Since, theoretically, every species of Salix can hybridise with every other species, the 18 British species . . . . should produce about 144 binary hybrids." Only 57 of these are recorded for Britain; and 11 ternary hybrids. Although Linnaeus, Smith and Wulfen described the forms of *S. repens* as species, these have now been reduced to forms. Smith's so-called species can be matched at the present day with care in getting representative specimens, and I have listed them because enthusiastic collectors desire to add them to their herbaria.

The eighteen British species follow each other exactly in the sequence given by E. F. Linton in his Monograph. The hybrids that follow *S. purpurea* in the Monograph differ from the order given in " The London Catalogue." This was due to the author's desire to keep all the Synandrae together for the convenience of description, since all of them have the stamens connate or partly so. For a similar reason, he kept all of the hybrids of *S. viminalis* with the Capreae (*S. aurita*, *S. Caprea* and *S. cinerea*) together on account of " their close alliance and general resemblance." In one case I differ from him in regarding *S. ferruginea* G. Andersson as of different parentage from *S. aurita* × *viminalis.* I have seen numerous plants of this Willow, so carefully described by Smith as having the " leaves thin, lanceolate, with wavy crenatures and small teeth; minutely hairy on both sides . . . . leaves pale green, greyish and often rusty beneath." The thin and very short pubescence, as well as the inclination to become rusty beneath induce me to look to *S. cinerea* for these characters, and to name the hybrid *S. cinerea* × *viminalis.* Wimmer makes *S. ferruginea* Forbes a synonym of this hybrid. I have seen specimens named *S. ferruginea* by Leefe that were *S. aurita* × *viminalis*, so it is easy to make a mistake by one who has not seen the two. The last-named hybrid has the under surface of the leaves silky with a dense covering of hairs, loosely adpressed.

A third breach of the alphabetical sequence in the Monograph occurs amongst the hybrids of the Capreae with *S. Andersoniana*, previously known as *S. nigricans* Sm. The descriptions were all in type and in position, before the author decided to eliminate the last name, as a *nomen confusum.* This was a step in the right direction, though it played havoc with the alphabetical order of the names. Smith described *S. nigricans* from male specimens brought from Norfolk and Hereford, where they do not now exist. I have seen Smith's ♂ specimens Nos. 2 and 3 from Mr Crowe's garden in 1800, and they appeared to me to be *S. Andersoniana* × *phylicifolia*, and possibly cultivated exotics. These ♂ specimens he combined with ♀ specimens from Lapland and so described his *S. nigricans*, though the two forms of leaves were different. In trying to match *S. nigricans* Sm., as figured in " Eng. Bot., ed. 2, pl. 1368," in the Highlands I found I had got the hybrid *S. Andersoniana* × *Caprea* × *phylicifolia.* The name, *S. Andersoniana* Sm. gets one out of the difficulty, as the type of the species, since drawings, description and specimens leave no doubt as to the identity of the type. Some sixty or more forms of *S. nigricans* have been described as species or otherwise. The belief is that most of the Highland forms described by Smith as species are now extinct, and that their places are taken by an equal or greater number of others. Many of them consisted of forms of that protean hybrid *S. Andersoniana* × *phylicifolia.* Where the two species grow together in considerable numbers it is difficult to find either of them pure. Willows being entomophilous, and these two species being closely related and flowering contemporaneously, insects, especially bees, cross and mix them up in every conceivable way. The best way to get over this difficulty is to get acquainted with the characters of *S. Andersoniana* and *S. phylicifolia* as defined by the Scandinavian salicologist, S. J. Enander, and E. F. Linton. All bushes or specimens that mix or confuse these characters are best classified under *S. Andersoniana* × *phylicifolia*.

Although I have ♂ and ♀ specimens of five varieties or forms of *S. triandra* L., I have not burdened the list with them. They are enumerated and named by Andersson. They include the subspecies *S. Hoffmanniana* (Sm.). In introducing *S. triandra* × *viminalis* b. *Trevirani* (Spr.) to the list of British Willows, I have been actuated by the much greater length and width of the leaves of the Hereford and Staffordshire specimens, as well as those of an old Surrey bush, as compared with the small and narrow leaves of the form a. *hippophaefolia* (Thuill.). The former is always ♂ in my experience, with stout catkins; the latter always ♀ with slender catkins. Other examples of one sex only in Britain are sub-species *S. decipiens* (Hoffm.) ♂, *S. undulata* Ehrh. ♀, and × *S. acuminata* Sm., ♀. *S. hexandra* Ehrh. is now stated to be the hybrid *S. alba* × *fragilis* × *pentandra*, so that I have put *S. Ehrhartiana* Sm. in its place for the British *S. alba* × *pentandra*. The forms placed under *S. purpurea* as f. *Lambertiana* (Sm.) and f. *Woolgariana* (Borr.), are, in my opinion, identical, as I have proved, by collecting both forms from the same bushes, and by cultivation. I have also seen them as gathered by another collector from one and the same bush. The oblong leaves of f. *Lambertiana* are the product of stooled bushes, or strong shoots from the base of tall bushes. This is the older of the two names. The cuneate-obovate leaves of f. *Woolgariana* are the product of old or adult bushes. *S. viminalis*, b. *intricata* Leefe is fairly frequent in Surrey, but unimportant. So far as I have seen, the narrow or linear leaves of *S. viminalis*, c. *linearifolia* are of doubtful constancy, because bushes or small trees that are allowed to get old produce leaves of decreasing width; yet many people collect them. Where names given by F. B. White or Andersson are to be excluded from certain hybrids, the alterations are due to the criticisms of S. J. Enander and E. F. Linton.

DIFFERENCES FROM THE CAMBRIDGE FLORA.

In the above work it is assumed that *S. undulata* Ehrh. and *S. lanceolata* Sm. are not synonymous, the former being placed under *S. alba* × *triandra* and the latter under *S. triandra* × *viminalis*. The glabrous ovary of × *S. undulata* is against the theory that *S. viminalis* had any part in the parentage. Ehrhart described his plant as having hairy ovaries, but his description must have been faulty since they are glabrous in his own specimen. The actual size of the leaves of a dried specimen cannot be depended upon to establish a real difference between two Willows, since they are always the victims of their immediate surroundings, yet "The Cambridge Flora" lays great stress on the size of the leaves of Smith's *S. lanceolata* as compared with Ehrhart's *S. undulata*. Plants of *S. lanceolata* on the banks of the Thames can furnish twigs with smaller leaves than those given for *S. undulata*, and longer ones than those mentioned for *S. lanceolata*. *S. hippophaefolia* Thuill. has pubescent ovaries, leaves that are pubescent at first, with obscurely serrulate or crenulate leaves and quite different stipules from *S. lanceolata*, so that the two could scarcely have had the same parentage. Even Smith himself, in his mature judgment, admitted that *S. lanceolata* and *S. undulata* were synonymous (1830 and 1840); Wimmer followed suit in 1866, and E. F. Linton in 1913.

Under *S. fragilis*, var. *latifolia* Andersson the figures of Sm. Eng. Bot. t. 1807, and Forbes Sal. Wol. t. 27 are quoted as representing such a variety. In my opinion both figures represent *S. alba* × *fragilis* (*viridis* Fr.), even though they are there named *S. fragilis*. The artist has made the ovary appear sessile, whereas it should be shortly pedicellate. I could not imagine any form of *S. fragilis* as having a sessile ovary. Under *S. alba* × *fragilis* (*viridis* Fr.) the figure of *S. Russelliana*, Eng. Bot. t. 1808, is quoted and the leaves represented are said to be from a coppiced shoot. I consider them quite natural and that they represent the ordinary British *S. fragilis*. The deep, irregular serratures of the leaves, and the subulate, gradually tapered ovary attest this.

The author of "The Cambridge British Flora" takes a different method of dealing with the intricate forms of *S. repens* L. from that adopted in "The London Catalogue," but this may be taken as a matter of opinion and an easy way of solving the problems; but he hopes more attention may be given to the study of varieties and forms of species, and that some more of Smith's described forms of *S. repens* may be rehabilitated. He arranges them in three groups, the first of which is (a) *S. repens*, var. *ericetorum* Wimmer et Grabowski. This includes *S. repens* Sm., *S. prostrata* Sm., *S. repens*, var. *vulgaris* Koch, *S. repens*, var. *genuina* Syme Eng. Bot. viii., 246 (1868), including var. *prostrata*, var. *ascendens*, and var. *parvifolia*. The second group (b) is placed under *S. repens*, var. *fusca* Wimmer et Grabowski, and includes Syme's *incubacea*, var. *lanata* of MM. Camus, *S. fusca* L., *S. incubacea* L., *S. incubacea* Sm. and of other authors. The third group (c) contains *S. repens*, var. *argentea* of Syme's Eng. Bot. viii., 248. I have sheets representing all the forms mentioned under *S. repens* L., except the typical *S. incubacea* L., and *S. prostrata* Sm. Most of them are from Surrey, except *S. repens*, var. *argentea*.

S. nigricans Sm. is retained in The Camb. Brit. Fl., but I have given the reasons above for the change to *S. Andersoniana*. One point here calls for explanation. Two sub-varieties are created here, namely, (a) sub-var. *leiocarpa* nobis, and (b) *eriocarpa* nobis. *S. Andersoniana* Sm. had a glabrous ovary, and S. J. Enander, the eminent Swedish salicologist, says the ovary is always glabrous; E. F. Linton says, " pubescent in some forms."

Under *S. herbacea* × *lanata* two forms have been described, namely, × *S. Sadleri* A. & G. Camus, and × *S. stephania* White. The former is the older name, and as the plant under cultivation developed characters showing the parentage given, it was inevitable that some botanist would recognise it. *S. stephania*, therefore, sinks to a synonym of × *S. Sadleri*, because two names for the same hybrid are unnecessary.

Under *S. herbacea* × *lapponum*, four hybrid Willows are named. All of them have been well scrutinised by E. F. Linton, assisted by S. J. Enander and others, some of them being cultivated till they showed characters of their respective parents. The hybrids of the smaller Highland Willows cannot be dealt with from their general appearance. A large proportion of them in which *S. herbacea* is one of the parents bear a considerable resemblance to one another and have to be separated by the indumentum of the leaves, ovaries, etc., or its absence, and by the relative length of the style and stigmas. (A) × *S. cernua* Linton, is a synonym of *S. herbacea* × *repens*, attested by the small size and shape of the leaves, their feeble serrations, the reticulation of the upper surface, and the silky pubescence in their early stages. (B) × *S. sobrina* White is a synonym of *S. herbacea* × *lapponum*, and a much older name for it is *S. ovata* (Seringe) Andersson. The oval leaves, rounded at both ends or subcordate at the base bear a strong imprint of the influence of *S. herbacea*; and the more or less densely pubescent ovary and long style reflect the influence of *S. lapponum*. (C) × *S. eugenes* Linton, is a synonym of *S. herbacea* × *lapponum* × *myrsinites*, and much resembles the previous hybrid, with the addition of several features or characters of *S. myrsinites*, namely, more leathery leaves, more strongly serrate, and very long, reddish style and large stigmas. The elevated reticulation on the underside of the leaves also comes from *S. myrsinites*. (D) × *S. Grahami* White is a synonym of *S. herbacea* × *myrsinites*, and bears a strong resemblance to the previous two in the form of the leaves, but their glossy green colour and raised reticulation show the influence of *S. myrsinites*; and so do the reddish hue of the bracts, styles and stigmas. So far as general appearance goes, a fifth hybrid could as easily have been added to the above, with equal injustice to the parents. I refer to *S. arbuscula* × *herbacea* (*S. simulatrix* White). The leaves here again show the influence of *S. herbacea*, and are closely serrate as are those of both parents. The slender ascending stems are intermediate. The long silky hairs on the underside of the young leaves, their raised netted veins on both sides, the shape of the catkins, and the grey tomentose ovaries all claim *S. arbuscula* as a parent. I identified this hybrid on the spot, in its wild habitat.

HYBRIDISATION AND ADVENTIVE PLANTS.

EXTRACTS FROM PREFACE TO FLORAE NOVAE-ZELANDIAE.

By J. D. Hooker, 1853.

" Hybridisation has been supposed by many to be an important element in confusing and masking species . . . . as an agent in confusing species (it) is a very favourite argument with those who are fond of founding species on inconstant characters : when shown a specimen combining two such spurious species they at once pronounce it a hybrid—a very simple way of getting rid of a difficulty.

" The most satisfactory proof we can adduce of hybridisation being powerless as an agent in producing species (however much it may combine them) is the fact that no hybrid has ever afforded a character foreign to that of its parents, and that hybrids generally are constitutionally weak, and almost invariably barren. Unisexual trees must offer many facilities for the natural production of hybrids, which, nevertheless, have never been proved to occur, nor are such trees more variable than hermaphrodite ones.

" The fact now universally conceded by all intelligent horticulturists that no plant has been acclimated in England within the experience of man is a very suggestive one." Can this be now seriously maintained ?—Editor.

PERSONALIA AND VARIOUS NOTES.

Mr J. F. Rayner gave as his Presidential Address to the Southampton Natural History Society a Review of his Botanical Experiences in four Counties in 1925.

The large Indian and general Herbarium (50,000 sheets) made by Mr J. S. Gamble, together with his interesting collection of Indian timbers and a selection of his botanical books, have been presented to Kew by Mrs Gamble.

Dr F. W. Pennell, Curator of the Academy of Natural Sciences, Philadelphia, has been exploring Peru and Chili and, it is said, has brought back over 100 new species of Scrophulariaceae. Ten thousand specimens were collected in all.

Mr Edward and **Mr George Cadbury** have presented 414 acres of Chadwick Manor Estate, near Rubery, in Worcestershire, to the National Trust. It includes St Oswald's Camp.

Prof. John Percival has prepared a collection of the chief Wheats of the world—11,300 single-line forms mounted on stout sheets, 36 cm. x 28 cm., contained in 15 cases. The price is £100 a set. Only a few sets are available. They have been described in his Classic Monograph on the Wheats.

Mr Ferdynand Karo of Poland has recently completed 65 years of professional work. Before he left school he had began a Herbarium. He spent 20 years in Siberia. At Irkutsk he collected 5000 species and named 300 varieties. In four years at Nenczynsk he collected 30,000 specimens, naming 460 varieties. Near Blago-Vyeshchensk, where he was 4 years as a pharmacist attached to the gold mines, he collected 20,000 specimens, 500 being new varieties. He was a great friend of M. Freyn, my old correspondent, who was a mining engineer. Among the large number of plants which he named eighteen bear the name *Freynii*. The Pharmaceutical Society of Poland, with fitting ceremony, celebrated Karo's sixty-five years' work in June 1925.

Mr G. C. Calder, B.Sc., Curator of the Calcutta Botanic Garden, has been appointed Director of the Botanical Society of India.

The Herbarium of the bryologist, W. Ingham, has been acquired by gift by the University of Leeds. It contains 12,000 specimens, some of which are original gatherings.

Dr E. J. Salisbury, on December 9, 1924, gave a very interesting lecture to the Pharmaceutical Society in London on "The Nature and History of the British Flora."

La Societe Botanique de Geneve held its 50th anniversary on December 16th, 1925, when the President, M. Henri Romieux, who presided at its foundation, gave its history since 1875. The University of Geneva conferred on our valued Honorary Member, G. Beauverd, a doctorate for his researches in Botany. On the proposition of Prof. Chodat, seconded by Dr Beauverd, Dr G. Claridge Druce was unanimously elected " membre correspondant pour services rendus à la science botanique."

BONAPARTE, PRINCE ROLAND. Note by M. Henri Lecompte on Les Derniers Publications et les Collections Botaniques de Prince Roland Bonaparte, Membre de l' Academie des Sciences. This alludes to the publication of fascicles xiv., xv., et xvi. of the "Notes Pteridologiques," the last published works of our valued member. They contain important descriptions of Ferns from the Belgian Congo, Madagascar, India, Indo-China and Borneo. The Madagascar plants were chiefly collected by Berrier de la Bathie. Christensen, the author of *Index Filicum*, the Prince's valued collaborator, assisted in their preparation during the Prince's " cruelle maladie," under the inspiration of his daughter, S.A.R. the Princess of Greece. His Fern herbarium is the largest in the world. This has been given to the Muséum National d'Histoire Naturelle, but the old building being insufficient to house them adequately the Princess of Greece has had them housed in a special department, together with his Fern Library, which bears the name Galerie Bonaparte. The Phanerogams in his collection, which, we believe, include M. Rouy's plants, are to go to the Faculté des Sciences de Lyon.

THE Rev. W. Keble Martin, Coffinswell Rectory, Newton Abbot, is painting British Plants and would be glad if members would send send him fresh specimens.

F. J. HANBURY, Esq., Brockhurst, East Grinstead, is anxious to have seeds of rare British plants. He will defray expenses.

Mr A. E. WADE, Botanical Department, the University of Cardiff, is contemplating the preparation of a Flora of Monmouthshire, and would be glad of assistance.

MRS ISABEL ADAMS, F.L.S., is painting British Aquatics. Members wishing to help in collecting specimens are asked to communicate with her at 14 Vernon Road, Edgbaston.

Mrs Perrin, 23 Holland Villas Road, London, W.14, is continuing her beautiful paintings of British Plants. Members willing to assist in collecting specimens are asked to write to the above address.

Mr T. A. Dymes, F.L.S., Carthona, West Drayton, Middlesex, wants ripe capsules of British Orchids, especially *Malaxis*, *Herminium*, *Cephalanthera*, *Spiranthes*, &c.

Mr H. Britten, 5 Wenloch Terrace, Fulford Road, York, is preparing a Flora of Cumberland, and would be glad of any records or notes.

ADDITIONS AND CORRECTIONS.

Report 1922.

p. 828. Lines 21 and 22. For " *V. tricolor* L., var. *Lloydii* (Jord.), fide W. G. Travis, who saw all these specimens on October 27, 1922 " read " *Viola tricolor* L., sub-species *genuina* Wittrock, var. *faeroensis* (W. Becker) C. H. Ostenfeld, in *Botany of the Faeroes*, part III., p. 856 (1908)."—H. H. Johnston.

Line 27. For " *V. arvensis* Murray, var. *obtusifolia* (Jord.), fide W. G. Travis " read " *Viola derelicta* Jordan."—H. H. Johnston.

Report 1923.

p. 26. Line 30. For " Var. SUBCAUDATIFOLIUM " read "Var. CAUDATIFOLIUM."

p. 148. Line 16. For " *latifolia* " read " *latifolium*."

p. 181. Line 4. For " sand flats " read " Sand Flats."

p. 213. Line 30. For " Exeter " read " Painswick, Gloster."

p. 236. Line 9. For " W. Perth " read " W. Ross."

p. 237. Line 28. For " W. Perth " read " W. Ross."

Report 1924.

p. 427. Line 20. For " *micropetalus* " read " *microcarpus*."

p. 435. Line 1. For "Easton, Roxburgh" read "Earlston, Berwick."
p. 441. Line 6. For "ALONIENSE" read "OXONIENSE."
p. 445. Line 37. For "TRANSWALLIANA" read "TRANSWALLIANUM."
p. 450. Line 26. Add "Hunsbury Hill, Northants. The plant is now destroyed there by the iron works.
p. 457. Lines 12 and 16. For "MELVILL" read "MELVILLE."
Line 26. For "F. ROBINSONII" read "A. ROBINSONII."
p. 462. Line 27. For "hierarchiarch" read "hieraciarch."
p. 463. Line 35. For "country" read "county."
p. 465. Line 29. For "*alterniflorum*" read "*angustifolium.*"
p. 484. Line 10. For "International" read "Imperial."
p. 555. Line 4. For "Dr." read "O. K."
p. 556. Line 14. For "Routh Park" read "Roath Park."
p. 561. Line 28. For "Ben Evenagh" read "Ben Benevenagh."
p. 567. Line 3. For "ARBOREA" read "ARBORESCENS."
Lines 13 and 26. For "Foch" read "Fach."
p. 568. Line 15. For "Dunfarsghy" read "Dunfanaghy."
p. 578. Line 12. For "Mdesteg" read "Maesteg."
p. 580. Line 18. Delete "Hevingham, Norfolk, Nicholson *Additions.*"
p. 582. Line 21. For "Gilton" read "Elton."
p. 583. Line 7. For "Mucknash" read "Monknash."
p. 588. Line 6. For "Clawton" read "Kisden, York."
p. 590. Line 15. For "ALBUM" read "VULGARE."
p. 598. Line 28. For "WADE" read "WEBB."
p. 607. Line 35. Delete "*Gnaphalium supinum.*"
p. 686. Line 27. For "S. & T." read "McMill."
p. 687. Line 33. Insert as authority for CENTAURIUM "W. Wright."
p. 688. Line 29. After "ALNUS ALNUS (L.)" insert "Britt. & Br."
p. 698. Line 32. After "twine" add "'em."
p. 699. Line 5. For "HERBARIUM" read "EXCHANGE."

ADDENDA.

PLANTS NEW TO BRITAIN.

415 (2). SPERGULARIA NICAEENSIS Sarato. See Rouy & Fouc. Fl. Fr. iii., 307. Alien, Eur. mer. Newport, Monmouth, R. MELVILLE. Det. A. THELLUNG. Closely allied to *S. purpurea* G. Don, and with much of the appearance of *S. atheniensis*, but it has larger petals (4¼ mm.) and longer pedicels.

†452 (2). MALVA AMBIGUA Guss. Alien, S. Europe. Barry, Glamorgan, September 1923 [102], R. L. SMITH. Det. A. THELLUNG and C. H. OSTENFELD. I saw it there also in 1925, Editor.

†509 (3). OXALIS LATIFOLIA H.B.K. Nov. Gen. et Sp. v., 327. Alien, Mexico. Bellozone Valley, Grouville Station, Jersey, 1925, L. ARSENE.

130 (2). THERMOPSIS Br. in Ait. Hort. Kew. iii., 3, 1811.

†526 (2). T. MONTANA Nutt. (T. FABACEA auct. Am. bor., non DC.). Alien, Amer. bor. In some plenty at Gailey Reservoir, Staffordshire, doubtless planted. G. C. DRUCE and Sir R. CURTIS.

1050 (2). EPILOBIUM AMBIGENS Hausskn. Det. A. THELLUNG. Native. With *E. Lamyi*, *obscurum*, *montanum* and *parviflorum* near Henley, Oxon. Here there was a confused mass of hybrids—*montanum* × *obscurum* and *montanum* × *parviflorum*, and another in which *E. Lamyi* was present, unless indeed it is a natural intermediate between these plants. The hybrid × *E. semiobscurum* Borbas, which is said to have the foregoing parentage, is already in our List, but this Henley plant has a different facies, the upper part of the stem, the pods and upper leaves or bracts being more canescent. G. C. DRUCE.

1393 (2). SENECIO ERRATICUS Bert. See *Rep. B.E.C.* v., 35, 140, 771 ; vii., 33, 190. Mr C. Trapnell gathered plants near Lyndhurst, S. Hants, in 1923, growing with *Jacobaea* and *aquaticus* which recalled the above critical species, and Dr Ostenfeld found and described a hybrid from Surrey of these species (*Rep B.E.C.* 39, 1923) which has something of the facies of the above. Dr Murr and the Kew authorities named the Hants plants as *erraticus* (*barbaraefolius* Krock.), and Dr Thellung has recently confirmed this name. In the absence of more complete specimens I felt uncertain, but with Dr Thellung's authority we may now feel pretty confident of our being able to retain it as British. G. C. DRUCE.

†1412 (11). GAZANIA RIGENS (L.) R. Br. Alien, S. Africa. Hortal. Sennen Cliffs, Cornwall, 1925, E. B. WILKINSON.

†1255 (2). ASTER FLORIBUNDUS Willd. (A. NOVI-BELGII, sub-sp. FLORIBUNDUS (Willd.) Thell.), var. MINOR (Nees). Alien, Amer. bor. Hortal. Waste ground, Cambridge Road, Colchester [2325], G. C. BROWN. Det. A. THELLUNG.

†1257 (6). A. VIMINEUS Lam. Alien, Amer. bor. Hortal. With above [2326]. G. C. BROWN. Det. A. THELLUNG.

†1257 (7). A. ASCENDENS Lindl. Alien, Amer. bor. Waste ground, Splott, Cardiff, R. L. SMITH.

1572. HIERACIUM RECLINATUM Almquist. Sweden. A plant, allied to this, teste Dahlstedt grew at Llandecwyn, 4 miles N.-E. of Harlech, Merionethshire, August 1919, G. C. DRUCE. *Reclinatum* is put subordinate to *H. laeticeps* Dahlst. in Lindm. *Svensk Fan.-Flora*, p. 617.

1630. H. SCYTOPHYLLUM Omang, var. In a wood at 700 feet altitude at Yspytty Cynfyn, about ten miles from Aberystwith, Cardiganshire, G. C. DRUCE.

1635 (2). H. POLYCOMUM Dahlst. Native, Scandinavia. A plant gathered by me at Ronas Voe, Zetland, is named a modification of *polycomum* by Dahlstedt. A plant very near to above grew at Harlech, Merioneth in 1919. G. C. DRUCE.

†1731 (2). CYCLAMEN REPANDUM Sm. & Sibth. Alien, S. Europe. In abundance and spreading at Penrhos, Anglesey. The tubers were brought from Sorrento, Italy, many years ago by Lady Stanley of Alderley. Many hundreds of plants were in great beauty last April. G. C. DRUCE.

1878. LINARIA REPENS × SUPINA, nov. hybr., with *L. repens* Mill and *L. supina* Desf. Par, Cornwall, found by L. MEDLIN and sent by C. E. THURSTON. This has the low stature of *supina*, but is more erect; the leaves are narrowly linear; the corolla pale-flowered with yellowish tint and faint striae of violet; the seeds barren. I name it × L. CORNUBIENSIS. G. C. DRUCE.

†1930 (5). VERONICA SALICIFOLIA Forst. Alien, New Zealand. Hortal. Old quarry, St Helier's, Jersey, L. ARSENE. Det., as probably this, A. THELLUNG.

†2219 (3). EUPHORBIA CERATOCARPA Ten. Alien, Ital. mer. et Sicilia. Barry, Glamorgan, R. MELVILLE and R. L. SMITH. Shown to me and thought to be near *palustris* L. Dr THELLUNG identifies it with above.

†2850 (2). HORDEUM GUSSONEANUM Parl. Alien, Sicilia, ? Hispania. Cardiff, Glamorgan, R. L. SMITH and R. MELVILLE.

2919 (2). BOTRYCHIUM RUTACEUM Sw. Strachan, Kincardine, J. SIM in *Herb. H. E. Fox* as *B. Lunaria*, July 1871. Particulars in next *Report*. The late Prebendary H. E. Fox gave me his Herbarium last year, and in going through it, I detected that one of four specimens of the Moonwort was this species.

SUPPLEMENT TO REPORT OF BOTANICAL SOCIETY AND EXCHANGE CLUB FOR 1924.

THE ADVENTIVE FLORA OF THE PORT OF CARDIFF

By A. E. WADE, F.L.S., and R. L. SMITH.

The following account of the adventive flora of the Cardiff district is based for the most part upon observations made during the past five years, and upon specimens in the Welsh National Herbarium (National Museum of Wales). A few records from other sources have been added.

Three accounts of the alien flora of the district have been previously published. The first was a paper on the ballast plants of Cardiff by John Storrie, *Transactions of the Cardiff Naturalists' Society*, vol. 8, p. 743 (1876), where about 48 species are enumerated. Many of the specimens he collected remained unnamed until recently. Another account by the same author appears as an appendix in his *Flora of Cardiff* 1886. Riddelsdell in "A Flora of Glamorgan," *Journ. Bot. Suppl.* 1907, includes Storrie's records and many of his own.

The area dealt with includes Cardiff, Penarth and Barry, and the immediate environs, the principal localities being the docks at those places. Cardiff Docks cover an extensive area to the east of the Taff estuary, and adventive plants are likely to occur anywhere in the vicinity. When in dock for a few days most of the ships get a thorough clean and all the deck sweepings, etc., are deposited along the roadside near the dock. The heaps so formed generally produce a crop of plants; sometimes in surprising variety. One such last year gave us three North American species. The ballast is used for filling in the low-lying land in the neighbourhood of the docks. The most prolific area is a tract of land between the foreshore and the last new dock. It is here that all the ships' ballast used to be tipped in bygone years. In 1884 John Storrie recorded about 50 adventive species for Cardiff Docks, and over 80 per cent. of them were found on this spot. It is certain that no ballast has been tipped here for years, yet there are many alien plants to be seen every year. To the eastward of the Docks are the Dowlais Steel Works. All the molten slag from the furnaces is (and has been for years) deposited on the foreshore. When ballast was to be disposed of it was tipped on to the slag heaps. At the present time these ballast covered slag heaps are still smouldering beneath the surface and in places the ground is not only warm but actually hot; no frost could possibly penetrate it. It is difficult to imagine a better " home from home " for these adventive plants. Nine or ten species still to be found on this spot were recorded by Storrie forty years ago, and it is quite probable that these plants have occurred here every year in the meantime. Alterations to sidings, etc., sometimes expose fresh soil and thus give rise to fresh plants, seeds of which in many cases have lain dormant. There are two docks at Barry (about seven miles S.W. of Cardiff, but included in the Port of Cardiff). Between the No. 2 dock and the Bristol Channel is a tidal pond about 500 yards long and 150 yards wide. This is being gradually filled in with any sort of suitable material that the authorities can procure. All the ballast, deck sweepings, etc., from the ships are deposited here. The number of adventive plants that appear on this tract of " made " ground is surprising, notwithstanding the fact that something like 90 per cent. of the material tipped is buried too deeply for any seed which it may contain to germinate. Some of the more robust species (*e.g.*, *Reseda alba*, *Centaurea aspera*, *Stachys recta*, *Chenopodium ambrosioides*, etc.), are quite naturalised and appear every year in increasing quantities. The above-mentioned pond is only about a dozen yards narrower than it was in 1901; so it seems that Barry Docks will afford a home for adventive plants for many years to come. The local flour mills are responsible for the introduction of a few species such as *Gilia capi-*

tata, *Alyssum incanum*, *Bromus unioloides*, etc. Some years ago the Taff Vale Railway Company started to build extensive sidings at Radyr. The work is still unfinished, and at present there exist about eight or nine acres of waste land completely enclosed by railway lines. A few years ago several truck loads of sand ballast were tipped along the edge of one of the sidings. This narrow ridge of sand produced in one season (1921) four species not previously seen on British soil, and representatives of no less than 15 genera of Leguminosae. The sand must have come originally from some Mediterranean port, because all these adventive plants are natives of South Europe. Five or six species are still to be found there, but they are being gradually smothered by the more robust native plants. A piece of low-lying land on the foreshore at Splott, Cardiff, is used by the Corporation for the tipping of town refuse. On the surface of these tips grain-siftings from the local flour mills are scattered broadcast, resulting in a large crop of grain-sifting aliens mingled with other plants introduced by town refuse.

Many of the species enumerated are naturalised, the majority however persist only for a season, the seeds in most cases never ripening, continual re-introduction accounting for the presence of many of them from year to year. It must, of course, be realised that the following is the result of several years of observation and that one must not expect to meet in a single visit with more than a few of the species enumerated. Nevertheless during a visit of two days in October of 1924 Dr Druce, in company with the writers, observed no less than eighty-three of the species herein mentioned.

This list makes no pretence to completeness. Some plants still remain to be identified, and each year adds its quota of new records; indeed, 1924 was responsible for the addition of fifty. Common weeds of cultivation are omitted.

The sequence of genera and species followed is that of the "List of British Plants" by Dr G. C. Druce, to which the numbers refer. Following the name of the plant a general indication of the geographical distribution is given, followed by the locality or localities in which the plant has been observed in the Cardiff district.

When the writers are not responsible for the record the initials of the collector or recorder follow the locality.

As far as possible a specimen of all species observed is deposited in the Welsh National Herbarium.

Thanks are due to Dr G. C. Druce and Dr Thellung for their invaluable assistance in identifying specimens, and to Mr R. Melville, who has accompanied the writers on their excursions, for notes and specimens.

ABBREVIATIONS.

J.S.—John Storrie.
E.V.—Miss E. Vachell.
D.—E. Louden Downing.
A.H.T.—Princ. A. H. Trow.
T.H.T.—T. H. Thomas.
N.B.G.—New Botanist's Guide.
G.C.D.—G. C. Druce.
H.J.R.—Rev. H. J. Riddelsdell.
Miss B.—Miss H. O. Booker.
H.—H. M. Hallett.
G.T.—G. Traherne.
U.C.Hb.—Herbarium of the University of South Wales and Monmouth.
Fl. Glam.—Flora of Glamorgan, 1911.
Cardiff Nat. Soc. Proc.—Proceedings of the Cardiff Naturalists' Society.

RANUNCULACEAE.

16. ADONIS ANNUA L. Europe, Orient. Penarth, *J. S.*

31. RANUNCULUS MURICATUS L. Europe, Orient. Radyr, on sand ballast. This plant is naturalised in the Scilly Isles. It did not, however, persist for more than a season at Radyr.

55. NIGELLA DAMASCENA L. South Europe. Ballast, Cardiff, and as a garden escape at Sully, *J. S.*

60. DELPHINIUM AJACIS L. South Europe. Cardiff Docks, *H. J. R.* Radyr.

63. D. CONSOLIDA L. Europe, North Asia. Garden escape, Cardiff, *J. S.*

BERBERIDACEAE.

72. Berberis vulgaris L. Europe, Temperate Asia. Llandaff Bridge, *H. J. R.*

PAPAVERACEAE.

79. Papaver somniferum L. Greece, Orient. Of frequent occurrence on rubbish heaps, etc. Of garden origin.
83. P. Argemone L. Europe, N. Africa. Ballast, Cardiff, Penarth, *J. S.* Barry Docks.
84. P. hybridum L. Europe, Syria, N. Africa. Ballast, Cardiff. Penarth, *J. S.*
87. Argemone mexicana L. Mexico, N. America. Ballast, Cardiff, *J. S.*
90. Glaucium corniculatum Curt. Europe. Cardiff, *J. S.* Barry Docks, Splott. Introduced with grain siftings.
91. Roemeria hybrida DC. Europe, N. Africa. Ballast, Penarth, *J. S.*
95. Hypecoum procumbens L. Mediterranean Region, Arabia. Cardiff, *J. S.*

FUMARIACEAE.

112. Fumaria densiflora DC. Europe. Llandaff, *J. S.*
114. F. parviflora Lam. Ballast, Cardiff, *J. S.* Barry.

CRUCIFERAE.

120. Matthiola tricuspidata Br. Mediterranean Region. Cardiff Docks.
121. Cheiranthus Cheiri L. Europe. Cardiff Castle (extinct), Llandaff, *J. S.* Barry Castle, *D.*
128. Barbarea verna Asch. Europe. Ballast, Cardiff, Penarth, *J. S.*
155. Alyssum Alyssoides L. Europe, Orient. Ballast, Penarth, *J. S.*
157. A. incanum L. Europe, Siberia. Penarth and Cardiff Docks, *J. S.* Barry, Grangetown.
158. A. maritimum Lam. Europe. Ballast, Cardiff and Penarth, *J. S.* Naturalised on the river bank at Grangetown. Of garden origin.

166. COCHLEARIA ARMORACIA L. Europe. Frequent on rubbish heaps. Of garden origin.

183. SISYMBRIUM SOPHIA L. Temperate Region. Ballast, Cardiff, *J. S.* Barry, *E. L. D.* Penarth, *A. H. T.* Introduced with grain siftings, Splott.

184. S. ALTISSIMUM L. (=S. PANNONICUM Jacq.). Europe. Naturalised in some abundance on waste ground and about the docks.

185. S. ORIENTALE L. Europe, Orient, Himalaya Region. Common and apparently naturalised. b. *irioides.* Cardiff Docks.

186. S. PYRENAICUM L. (=AUSTRIACUM Jacq.). Mediterranean Region. Garden weed, Roath Park.

187. S. LOESELII L. Europe, Orient, Himalaya Region. Cardiff, *G. C. D.*

188. S. IRIO L. Europe, Asia, N. Africa. Penarth, *J. S.* Ballast, Barry. Common in 1923 and 1924.

191. S. POLYCERATUM L. South Europe, Asia Minor. Cardiff Docks. Introduced with grain siftings, Splott.

197. ERYSIMUM CHEIRANTHOIDES L. Europe, N. America. Cardiff, *H. J. R.* Barry, *E. L. D.* Cathays Park, *E. V.* Penarth Ferry, *J. S.* Canton, Radyr, Splott.

198. E. REPANDUM L. Europe, North Africa, West Asia. Cardiff Docks, *H. J. R.*

200. CONRINGIA ORIENTALIS Dum. Europe, Orient. Cardiff, Penarth, *J. S.* Radyr, Grangetown, Barry.

202. CAMELINA SATIVA Crantz. Europe, Temperate Asia. Llanishen, East Moors, *J. S.* Barry Island, Cadoxton, *H. J. R.* Barry Docks, Splott. Introduced with grain siftings. b. *foetida* (Fr.). Barry Island, *H. J. R.* Cardiff, *J. S.*

206. BRASSICA NAPUS L. Cultivated. Barry Island, Cadoxton, *H. J. R.* Cardiff Docks, Llandaff, *J. S.*

208. B. RAPA L. Cultivated. Cardiff, Splott. c. *Briggsii* H. C. Wats. Cardiff Docks, *H. J. R.*

209. B. TOURNEFORTII Gouan. Mediterranean Region, Orient. East India. Barry. Abundant in 1924.

211. B. CHEIRANTHOS Vill. Western Europe, N. Africa. Naturalised at Grangetown and about the docks.

212(2). B. FRUTICULOSA Cyr. Mediterranean Region. Cardiff Docks.

217. B. ALBA Boiss. (=SINAPIS ALBA L.). Europe, Orient, East India. Cultivated. Penarth, *J. S.* Barry, Radyr.

218. B. JUNCEA Coss. Asia. Barry. Abundant in 1924.

222. B. GALLICA (Willd.) Dr. (=B. POLLICHII Sch. & Spenn.). Europe. Introduced with grain siftings, Splott.

224. B. ADPRESSA Boiss. (=B. INCANA (L.) Doell). Europe. Penarth, *A. H. T.* Cardiff, Radyr, Barry. Naturalised in some quantity.

225. DIPLOTAXIS ERUCOIDES DC. Mediterranean Region, Asia Minor. Barry. Probably introduced with grain.

228. ERUCA SATIVA Mill. Mediterranean Region, West Asia. Introduced with grain siftings, Splott.

235. LEPIDIUM GRAMINIFOLIUM L. Europe, Syria. Barry, Cardiff. This has persisted in some quantity for several years.

237. L. DRABA L. Europe, Orient. Frequent and naturalised on waste ground.

239. L. PERFOLIATUM L. Southern Europe, Orient. Cardiff, Splott.

240. L. RUDERALE L. Europe, Orient, Australia. Rather frequent in waste places. Naturalised.

240(2). L. NEGLECTUM Thell. North America. Introduced with grain siftings, Splott.

241. L. SATIVUM L. Orient. Penarth, *A. H. T.* Cardiff, Roath, *J. S.*

247. L. VIRGINICUM L. North America. Radyr. Introduced with grain siftings, Splott.

247(4). L. DENSIFLORUM Schrad. (=L. INCISUM Banks & Soland.). New Zealand. Barry Docks.

249. THLASPI ARVENSE L. Europe. Penarth Dock, *J. S.* Cardiff, Splott. Introduced with grain siftings in the latter locality.

253. IBERIS UMBELLATA L. South Europe. Penarth Ferry, *J. S.* Probably of garden origin.

258. VOGELIA PANICULATA Hornem. (=NESLIA PANICULATA Desv.). Europe, Orient, North-West Asia. Introduced with grain siftings, Splott.

260. MYAGRUM PERFOLIATUM L. Europe, Orient. Cardiff Docks. Probably introduced with grain.

262. BUNIAS ERUCAGO L. Southern Europe, Asia Minor, Syria. Cardiff Docks, *H. J. R.*

263. B. ORIENTALIS L. Eastern Europe, Asia Minor. Penarth Ferry, Cardiff, *J. S.*

266. RAPISTRUM PERENNE All. Europe. Cardiff Docks, *H. J. R.*

267. R. ORIENTALE DC. Greece. Introduced with grain siftings, Splott.

268. R. RUGOSUM All. Europe, Orient. Barry, Splott. Introduced with grain.

269. R. LINNAEANUM Boiss. & Reut. South Europe. Introduced with grain siftings, Splott.

277. RAPHANUS SATIVUS L. Europe. A frequent garden outcast.

RESEDACEAE.

281. RESEDA ALBA L. Europe, Orient. Ballast, Cogan Pill, *E. V.* Barry, Cardiff, Radyr. Naturalised on waste ground. Of garden origin or introduced with grain.

282. R. PHYTEUMA L. Mediterranean Region, Asia Minor. Cardiff Docks, *J. S.*

283. R. STRICTA Pers. Algeria. Canton, *H. J. R.*

CARYOPHYLLACEAE.

318. DIANTHUS DELTOIDES L. Europe, Western Tibet. Bank of canal feeder, Cardiff, *Mr Chapman.*

324. D. CARYOPHYLLUS L. Europe, West Asia. Cardiff Castle Walls, *B. G.* (Extinct.)

328. GYPSOPHILA PANICULATA L. Europe, North Asia. Cardiff Docks, *H. J. R.*

331. SAPONARIA VACCARIA L. Europe, Asia Minor, Siberia. Ballast, Penarth, *J. S.* Barry, Cardiff, Splott. Introduced with grain or ballast.

332. S. OFFICINALIS L. Europe, West Asia. Cooper's Fields, *W. W. Pettigrew.* Radyr, Cardiff, Llandaff.

338. SILENE CONICA L. Europe, Orient. Penarth, Cardiff, *J. S.* Barry. Probably introduced with grain.

340. S. NOCTIFLORA L. Europe, Orient. Cardiff, Barry, Splott. Introduced with grain.

341. S. DICHOTOMA Ehrh. Europe. Cardiff, *E. V.*

342. S. GALLICA L. Europe. Cardiff, *J. S.* Splott. Introduced with grain siftings.

343. S. ANGLICA L. Europe. Cardiff. Introduced with grain siftings.

351. S. OTITES Wibel. Europe, Orient. Ballast, Cardiff, *J. S.*

354. S. NUTANS L. Europe, North Asia. Barry.

363. LYCHNIS GITHAGO Scop. Europe. Sully, Penarth, *J. S.* Cardiff, *C. N. S. Proc.*, 1873. Barry, Splott. Introduced with grain or grain siftings.

367. CERASTIUM ARVENSE L. Northern and Southern Temperate Regions. Barry.

394. ARENARIA TENUIFOLIA L. Europe. Ballast, Cardiff, *J. S.*

PORTULACEAE.

418. CLAYTONIA SIBIRICA L. North Asia, North-West America. Penarth, *J. S.*

419. C. PERFOLIATA Donn. North America. Cardiff, *J. S.*

HYPERICACEAE.

428. HYPERICUM CALYCINUM L. Eastern Europe. Barry, *D.* Planted, or a garden escape.

MALVACEAE.

441. ALTHAEA ROSEA L. Europe. Garden escape or outcast, railway embankment, Cardiff.

443. A. HIRSUTA L. Europe, Orient. Ballast, East Moors, Cardiff, *J. S.* Ely.

448. LAVATERA PUNCTATA All. Southern Europe, Asia Minor. Cardiff, *J. S.*

452(2). MALVA NICAEENSIS All. Mediterranean Region. Cardiff, Barry.

454. M. PUSILLA With. Europe, North Asia. Splott.

456. M. PARVIFLORA L. Europe. Splott.

459. SIDA SPINOSA L. Tropical Regions. Cardiff, *J. S.*

461. HIBISCUS TRIONUM L. Eastern Europe. Cardiff, *J. S.* Probably introduced with grain.

LINACEAE.

468. LINUM USITATISSIMUM L. Europe, Orient. Cultivated. Barry, *H. J. R.* Cardiff, Penarth, *J. S.* Frequent on rubbish heaps.

ZYGOPHYLLACEAE.

472. TRIBULUS TERRESTRIS L. Mediterranean Region. Cardiff, *J. S.*

GERANIACEAE.

475. GERANIUM VERSICOLOR L. South Europe. Cooper's Fields, Fairwater, Ely, Penarth, *Fl. Glam.* A garden escape. Radyr.

479. G. PHAEUM L. Europe. Cooper's Fields, *J. S.* Garden escape.

481. G. PYRENAICUM Burm. f. Europe, Asia Minor. Penarth Ferry, East Moors, *J. S.* Radyr. Established.

490(2). ERODIUM BOTRYS Bert. Mediterranean Region. Barry.

503. LIMNANTHES DOUGLASII Br. North-West America. Penarth, Cardiff, *J. S.* Probably of garden origin.

505. OXALIS CORNICULATA L. Temperate and Tropical Regions Barry House, Cardiff Docks, *H. J. R.* Penarth, *J. S.*

513. IMPATIENS GLANDULIFERA Royle. Himalaya Region. Naturalised along the Taff and Ely rivers.

VITACEAE.

521. VITIS VINIFERA L. Orient, North-Western India. Barry, Splott. Introduced with town refuse.

LEGUMINOSAE.

529. LUPINUS ANGUSTIFOLIUS L. Mediterranean Region. Sand ballast, Radyr.

536. SPARTIUM JUNCEUM L. Europe. Cardiff Docks.

542. ONONIS NATRIX L. Mediterranean Region. Ballast, Cardiff, *J. S.*

550. TRIGONELLA POLYCERATA L. Mediterranean Region, Orient. Introduced with grain siftings, Splott.

551. T. MONSPELIACA L. Mediterranean Region. Ballast, Cardiff, *J. S.*

552. T. CORNICULATA L. Southern Europe, Asia Minor. Barry, Splott.

554. T. CAERULEA Ser. Eastern Europe, Caucasus. Ballast, Cardiff, *J. S.*

556. T. HAMOSA L. Egypt. Ballast, Cardiff, *J. S.* Splott. Introduced with grain siftings.

560. T. LACINIATA L. Egypt. Ballast, Cardiff, *J. S.*

562. MEDICAGO FALCATA L. Europe. Penarth Ferry, *J. S.* Cardiff, Barry. Naturalised in several places. A form with virescent flowers is of frequent occurrence.

564. M. SATIVA L. Europe, Orient. Cardiff, Radyr, Barry.

565. M. MARINA L. Mediterranean Region. A feature of the vegetation of the Mediterranean shores. Cardiff, *J. S.*

566. M. ORBICULARIS All. Mediterranean Region, Abyssinia. Barry, Radyr.

569. M. SOLEIROLII Duby. Italy. Barry Docks.

571. M. TRIBULOIDES Desr. Europe. Cardiff, *J. S.*

572. M. TRUNCATULA Gaertn. Europe. Radyr, Barry.

573. M. LITTORALIS Rhode. Mediterranean Region. Barry. b. *inermis* Moris. Barry.

575. M. MUREX Willd. Europe. On sand ballast, Radyr, Barry.

579. M. HISPIDA Gaertn. Europe. a. *denticulata* Willd. Cardiff, Penarth, *J. S.* Barry, Splott. b. *apiculata* Willd. East Moors, *J. S.* e. *confinis* Burn. Cardiff, *G. C. D.*

580. M. ARABICA Huds. Europe. Ballast, Cardiff, Penarth, *J. S.* Barry.

581. M. MINIMA (L.) Bart. Europe. Cardiff, Penarth, *J. S.* Barry. Naturalised and increasing at Barry.

584. M. CILIARIS Willd. Mediterranean Region, Orient. Grangetown, *E. V.* Barry.

588. M. MURICATA All. Europe. On sand ballast, Radyr.

590. MELILOTUS MESSANENSIS All. Mediterranean Region. Cardiff, *J. S.*

592. M. SULCATA Desf. Mediterranean Region. Radyr.

595. M. ALBA Desr. Europe, Asia. Penarth, *J. S.* Cardiff, Radyr, Barry. Very common about the docks.

596. M. PETITPIERREANA Hayne (=ARVENSIS Wallr.). Ballast, Cardiff, *J. S.* Barry Island, *A. H. T.*

597. M. INDICA All. Europe, Northern Asia. Frequent on waste ground throughout the district.

601. TRIFOLIUM PANNONICUM Jacq. Europe, Orient. Penarth, *J. S.*

602. T. OCHROLEUCON Huds. Europe, Orient. Ballast, Cardiff, *J. S.*

603. T. CHERLERI L. Mediterranean Region. Sand ballast, Radyr.

605. T. LAPPACEUM L. Mediterranean Region, Orient. Barry, Splott.

606. T. ANGUSTIFOLIUM L. Mediterranean Region, Orient. Barry, Radyr.

608. T. INCARNATUM L. South Europe. Ballast, Cardiff, *Cardiff Nat. Soc. Proc.*, 1876. Barry. Probably introduced with fodder.

610. T. STELLATUM L. Mediterranean Region, Orient. Ballast, Cardiff, Penarth Ferry, *J. S.*

620. T. SUBTERRANEUM L. Europe, Orient. Ballast, Cardiff, *J. S.* Barry. Although this plant is not unlikely to occur as a native in Glamorgan, it is certainly only an alien at Barry and Cardiff.

622. T. RESUPINATUM L. Western Europe, Mediterranean Region. Penarth, *A. H. T.* Cathays Park, *E. V.* Cardiff, Radyr, Splott, Barry.

623. T. TOMENTOSUM L. Mediterranean Region. Barry.

627. T. HYBRIDUM L. South Europe, Asia Minor. Common in the district. b. *elegans* (Savi). Mediterranean Region, Asia Minor, N. Africa. Barry, *H. J. R.*

629. T. MICHELIANUM Savi. South Europe. Barry.

630. T. NIGRESCENS Viv. South Europe. Sand ballast, Radyr.

632. T. GLOMERATUM L. Western Europe, Mediterranean Region, Orient. Ballast, Cardiff, *J. S.* Barry.

633. T. SUFFOCATUM L. Western Europe, Mediterranean and Caucasus Regions. Whitmore Bay, Barry, Penarth, *J. S.*

635. T. AGRARIUM L. Europe, North Africa, Orient. Cardiff Docks, Sand ballast, Radyr,

641(2). ANTHYLLIS TETRAPHYLLA L. Mediterranean Region. A frequent plant on the Mediterranean coasts. Sand ballast, Radyr.

643. BONAVERIA SECURIDACA Desv. (=SECURIGERA CORONILLA DC.) South Europe. Cardiff, Penarth, *J. S.*

643(5). DORYCNIUM HIRSUTUM DC. South Europe. Sand ballast, Radyr, Barry, Cardiff.

643(6). D. RECTUM DC. Mediterranean Region. Barry. Established.

643(7). D. HERBACEUM Vill. South Europe, Asia Minor. Barry. Established.

644. LOTUS TETRAGONOLOBUS L. Mediterranean Region. Cardiff, *J. S.*

645. L. EDULIS L. Mediterranean Region. Sand ballast, Radyr, Cardiff.

645(2). L. CRETICUS L. Mediterranean Region. Barry.

649(5). L. ORNITHOPODIOIDES L. South Europe. Sand ballast, Radyr.

650(11). PSORALEA BITUMINOSA L. Mediterranean Region, Arabia. Radyr, Cardiff.

651. GALEGA OFFICINALIS L. Europe, West Asia. Canton. A garden outcast.

656. ASTRAGALUS HAMOSUS L. Mediterranean Region, North-West India. Cardiff, *J. S.* Radyr, on sand ballast.

665. SCORPIURUS SUBVILLOSA L. Mediterranean Region. Penarth, *J. S.* Radyr, Barry.

666. CORONILLA VARIA L. Europe. Cogan, East Moors, Penarth, *J. S.* Canton, *H. J. R.* Radyr, Cadoxton, Barry. In its Cadoxton locality it is rapidly covering a stretch of railway bank. It occasionally produces ripe fruit.

667. C. SCORPIOIDES Koch. Mediterranean Region, Persia. Cardiff, *J. S.*

670. ORNITHOPUS PINNATUS (Mill) Druce. Western Europe, Mediterranean Region. Ballast, Cardiff, *J. S.*

672. HIPPOCREPIS UNISILIQUOSA L. Mediterranean Region. Sand ballast, Radyr.

674(2). ARACHIS HYPOGEA L. Tropical Regions. Cultivated. Introduced with town refuse. Splott.

675. HEDYSARUM CORONARIUM L. Italy. Ballast, Cardiff, Penarth, *J. S.* Radyr, on sand ballast.

675(2). H. CAPITATUM Desf. Mediterranean Region. Cardiff, *J. S.*

676. CICER ARIETINUM L. Europe, Orient, East India. East Moors, *J. S.* Barry. Introduced with grain siftings.

681. VICIA VILLOSA Roth. Europe, Orient. Cardiff Docks, *H. J. R.* Barry. b. *glabrescens* Koch. Barry, *H. J. R.* Ballast, Penarth, *J. S.* Cardiff Docks, *H. J. R.*

683. V. VARIA Host. Europe, Orient, N. Africa. Cardiff, Barry. b. *dasycarpa* (Ten.). Radyr.

684. V. PSEUDO-CRACCA Bert. Italy. Sand ballast, Radyr.

687. V. BITHYNICA L. Europe. Sand ballast, Radyr, Cardiff.

689. V. FABA L. Cultivated. Frequently introduced with garden refuse and ship sweepings.

690. V. NARBONENSIS L. Mediterranean Region, Orient. Barry. b. *serratifolia* Koch. Barry.

691. V. LUTEA L. Mediterranean Region, Orient. Ballast, Cardiff, *J. S.* Grangetown.

697. V. SATIVA L. Cultivated. Very common on waste ground.

706. V. GRACILIS Lois. Europe, Syria. Ballast, Cardiff, *J. S.*

707. LENS ESCULENTA Moench. Orient. Barry.

711. LATHYRUS TUBEROSUS L. South Europe, Western Asia. Barry, *P. H. Holland.* Cardiff Docks, *H. J. R.*

716. L. SPHAERICUS Retz. South Europe. Barry.

721. L. CICERA L. Europe, Orient. Sand ballast, Radyr, Barry.

723. L. CLYMENUM L. Mediterranean Region. Splott, sand ballast, Radyr.

724. L. OCHRUS DC. Mediterranean Region. Canton, Barry.

726. L. APHACA L. Europe, Orient. Ballast, Cardiff, Grangetown, Penarth, *J. S.* Cathays Park, *T. H. T.* Barry.

731. PISUM ARVENSE L. Europe, North Asia. Splott.

732. P. SATIVUM L. Europe, North Asia. Introduced with ship sweepings and garden refuse. Cardiff, Barry.

ROSACEAE.

885. FRAGARIA MOSCHATA Duchesne. Europe. Established at Barry and Radyr. Of garden origin.

887. F. CHILOENSIS Duchesne. North America. Penarth Dock, *H. J. R.*

896. POTENTILLA INTERMEDIA L. Europe. Leckwith. Waste ground, Canton. It has persisted here for two or three years.

906. P. NORVEGICA L. North Temperate and Arctic Regions. Penylan, Splott, Cardiff, Radyr. Established in the two latter places.

972. COTONEASTER MICROPHYLLA Wallich. India. Llandough Quarry.

CRASSULACEAE.

1026. SEMPERVIVUM TECTORUM L. Europe, Orient. Grangetown, *E. V.* Barry, Cadoxton, *J. S.* Cardiff.

LYTHRACEAE.

1045. LYTHRUM HYSSOPIFOLIA L. Temperate Regions. Ballast, Cardiff, Penarth, *J. S.* Barry.

EPILOBIACEAE.

1060. CLARKIA PULCHELLA Pursh. North America. Penarth Ferry, *J. S.* Probably of garden origin.

1061. OENOTHERA BIENNIS L. North America. Radyr, Cardiff. This plant multiplies so quickly that in both the above localities there are literally thousands of them every year.

1062. OE. MURICATA L. North America. Waste ground, Canton. It persisted here for a few years. Of garden origin.

1065. OE. ODORATA Jacq. Chili. Cardiff Docks, *H. J. R.*

1070. OE. TENELLA Car. Chili. Penarth Ferry, *J. S.* Probably of garden origin.

CUCURBITACEAE.

1075. ECBALLIUM ELATERIUM A. Rich. Europe, America. Cardiff, *J. S.* Barry. This plant readily establishes itself and would probably become frequent if left undisturbed.

FICOIDEAE.

1077. MESEMBRYANTHEMUM EDULE L. South Africa. Barry.

UMBELLIFERAE.

1090. BUPLEURUM ROTUNDIFOLIUM L. Europe, Caucasus Region, Persia. Cardiff Docks, *H. J. R.* Penarth Ferry.

1091. B. PROTRACTUM Hoffmg. & Link. Mediterranean Region. Cardiff, Barry, *J. S.* Probably introduced at Barry with grain siftings.

1101. AMMI MAJUS L. Europe, Orient, North Africa. Introduced with grain siftings, Splott.

1103. CARUM CARVI L. Europe, Orient, North Asia. Cardiff, *H. J. R.* Penarth, Grangetown, *J. S.*

1116. MYRRHIS ODORATA Scop. Southern Europe, Caucasus Region. Cooper's Fields, *W. W. Pettigrew.*

1151(2). PEUCEDANUM GRAVEOLENS Benth. & Hook. f. Europe, Tropical Asia. Splott.

1157. CORIANDRUM SATIVUM L. Southern Europe, Orient. Grangetown, Cardiff, *J. S.* Splott, Barry.

1166. CAUCALIS DAUCOIDES L. Europe, Temperate Asia. Cardiff, *H. J. R.* Waste ground, Cathays Park. Introduced with chicken food. Barry.

CAPRIFOLIACEAE.

1179. SAMBUCUS EBULUS L. Europe, Orient, Himalaya Region. Penarth Docks, *J. S.* Cogan.

RUBIACEAE.

1201. GALIUM TRICORNE Stokes. Europe. Barry Island, *Woods.* Barry, Cardiff.

VALERIANACEAE.

1219. KENTRANTHUS RUBER Druce. Europe, Syria. Originally a garden escape, and now thoroughly naturalised in several places between Cardiff and Barry.

COMPOSITAE.

1242. GRINDELIA SQUARROSA Dunal. North-West America. Penarth Ferry, *J. S.* Cardiff. Introduced with grain siftings, Splott.

1244. SOLIDAGO LANCEOLATA L. North America. Cardiff. Garden relic.

1255. ASTER NOVI-BELGII L. North America. Cardiff. A naturalised garden escape.

1255(2). A. NOVI-ANGLIAE L. North America. Cardiff. Garden relic.

1262. ERIGERON CANADENSIS L. North America. Frequent on waste ground, railway banks and ballast.

1262(2). E. BONARIENSE L. Tropics and sub-tropics of the Old and New World. Cardiff.

1273. GNAPHALIUM LUTEO-ALBUM L. Cosmopolitan. Ballast, Cardiff, *J. S.*

1278(13). HELICHRYSUM MICROPHYLLUM Cambess. Mediterranean Region. Barry.

1284. INULA VISCOSA Ait. Mediterrancan Region. Barry, Cardiff. Naturalised and very luxuriant in the latter locality.

1286. PULICARIA PROSTRATA Asch. (= P. VULGARIS Gaertn.). Europe, Asia, N. Africa. Penarth.

1287(2). ODONTOSPERMUM MARITIMUM Sch.-Bip. Mediterranean Region, Canary Isles. Cardiff, *J. S.*

1290. AMBROSIA MARITIMA L. Europe, Orient, North Africa. Penarth, Cardiff, *J. S.*

1291. A. ARTEMISIFOLIA L. North America. Barry, Cardiff, Radyr. Probably introduced with grain.

1292. A. TRIFIDA L. North America. Cardiff.

1294. XANTHIUM STRUMARIUM L. Cosmopolitan. Cardiff.

1295. X. SPINOSUM L. Cosmopolitan. Cardiff, *J. S.* Barry, Canton.

1295(3). X. ECHINATUM Murr. North America. Cardiff, *G. C. D.*

1301. HELIANTHUS ANNUUS L. North America. Garden escape, or introduced with town refuse, Cardiff.

1302. H. RIGIDUS Desf. North America. Garden escape or outcast, Cardiff.

1306. GUIZOTIA ABYSSINICA Cass. Tropical Africa. Cardiff, *J. S.*

1311(2). BIDENS FRONDOSA L. North America. Cardiff, thoroughly naturalised and rapidly spreading.

1312. GALINSOGA PARVIFLORA Cav. Central and South America. Penarth, *J. S.* Grangetown.

1314. MADIA SATIVA Molina. North and South America. Cardiff, *J. S.*

1315. HEMIZONIA PUNGENS Torr. & Gray. California. Cardiff, *J. S.* Barry.

1317. H. KELLOGGII Greene. California. Cardiff, *J. S.*

1323. ANACYCLUS CLAVATUS Pers. Mediterranean Region. Cardiff, *H. J. R.* Barry, Splott. Introduced with grain siftings. b. *marginatus.* Cardiff Docks, *H. J. R.*

1324. A. RADIATUS Lois. Mediterranean Region. Barry, Splott, Cardiff. Introduced with grain siftings.

1325. A. VALENTINUS L. Mediterranean Region. Cardiff.

1327. ACHILLEA TANACETIFOLIA All. Europe, Orient. Radyr.

1331. A. NOBILIS L. Europe, Orient. Barry, Cardiff. Established in both places.

1335. A. CRETICA L. Orient. Near Penarth, *T. Chapman.*

1338. ANTHEMIS TINCTORIA L. Europe, Orient. Grangetown. Cadoxton. Naturalised. The var. *discoidea* (Willd.) grows with it.

1339. A. NOBILIS L. Europe. Cardiff Docks, *J. S.*

1343. A. ARVENSIS L. Europe, Orient. Ballast, Cardiff, *J. S.*

1344(2). A. PEREGRINA L. Italy, Greece, Asia Minor. Cardiff, *G. C. D.*

1348. A. MIXTA L. Mediterranean Region. Cardiff, *J. S.*

1355. CHRYSANTHEMUM PARTHENIUM Bernh. Europe. A frequent garden escape.

1357. C. CORONARIUM L. Mediterranean Region. Cardiff, *J. S.* Splott.

1362. MATRICARIA SUAVEOLENS Buch. (=M. DISCOIDEA DC.). North America. Common on waste ground throughout the district.

1367. ARTEMISIA ABSINTHIUM L. Europe. Splott, Canton.

1368. A. CAMPESTRIS L. Europe, North Asia, Orient, East India. Cardiff Docks, *J. S.*

1380. A. BIENNIS Willd. North America, Siberia, Himalaya. Cardiff, Radyr, Splott. Grain alien.

1383(2). A. GNAPHALODES Nutt. North America. Radyr, Cardiff. Established.

1387. PETASITES FRAGRANS Presl. Mediterranean Region. A garden escape, naturalised in several places in the district.

1396. SENECIO SQUALIDUS L. South Europe. Very common on waste ground.

1397. S. CRASSIFOLIUS Willd. Europe. Cardiff Docks, *H. J. R.*

1398. S. VERNALIS W. & K. Southern Europe, Orient. Cardiff Docks, *H. J. R.*

1401(2). S. NEBRODENSIS L. Southern Europe, N. Africa. Cardiff, *H. J. R.* Barry.

1402. S. CINERARIA DC. Mediterranean Region. Established on the river bank at Leckwith. A garden escape.

1411. CALENDULA ARVENSIS L. Europe, Orient. Cardiff, *J. S.*

1412(2). CRYPTOSTEMMA CALENDULA Druce. South Africa. Cardiff, *J. S.*

1439. ONOPORDUM ACANTHIUM L. Europe, North Africa, Orient. Penarth, *H.* Ballast, Cardiff, *J. S.*

1443. MARIANA LACTEA Hill. (= SILYBUM MARIANUM Gaertn.). Europe. East Moors, *J. S.* Barry.

1444. LUPSIA GALACTITES O.K. (= GALACTITES TOMENTOSA Moench). Mediterranean Region. Radyr, on sand ballast.

1454. CENTAUREA CYANUS L. Europe, Caucasus Region. Barry. *D.* Cardiff Docks, *H. J. R.* Ballast, Penarth. *J. S.*

1462. C. SOLSTITIALIS L. Europe. Ballast, Cardiff, *J. S.*

1463. C. MELITENSIS L. Europe, South America. Cardiff Docks.

1465. C. CALCITRAPA L. Europe, North Africa, Temperate Asia. Cardiff Docks, *H. J. R.* East Moors, Penarth, Leckwith, *J. S.* Barry.

1468. C. ASPERA L. Europe. Ballast, Cardiff, *J. S.* Barry. Probably introduced with grain siftings. Thoroughly naturalised and more or less common at Barry.

1476. CARTHAMUS LANATUS L. Europe, Orient. Radyr, Cardiff.

1477. C. TINCTORIUS L. Abyssinia. Dinas Powis, with the var. *inermis.*

1478. SCOLYMUS HISPANICUS L. Mediterranean Region. Barry. Cardiff.

1481. CICHORIUM ENDIVIA L. Europe, Orient. Radyr, Splott.

1502. CREPIS TARAXACIFOLIA Thuill. Europe. Common on waste ground throughout the district.

1638(21). ANDRYALA TENUIFOLIA Tineo. Mediterranean Region. Radyr, on sand ballast.

1648. LACTUCA VIROSA L. Europe, North Asia. "Has been recorded from the neighbourhood of the local Docks." *Fl. Glam.*

1649. L. SERRIOLA L. Europe. Cardiff, Barry. Naturalised, but gradually dying out.

1650. L. SALIGNA L. Europe, North Africa, Orient. Cardiff.

1660. TRAGOPOGON PORRIFOLIUS L. Mediterranean Region. Barry, *E. V.* Cardiff, naturalised.

PRIMULACEAE.

1742. ANAGALLIS FEMINA Mill. Europe. Penarth, *H.* Canton, Cardiff, *H. J. R.* Barry, Grangetown.

APOCYNACEAE.

1750. VINCA MAJOR L. Mediterranean Region. Penylan Hill, Ely, Rhiwbina, *Fl. Glam.* Garden escape.

LOGANIACEAE.

1751(10). BUDDLEIA SPECTABILIS Kunth & Bonche. Mexico. Introduced with garden refuse, Cardiff Docks.

POLEMONIACEAE.

1771. GILIA CAPITATA Sims. North America. Ballast, Cardiff, etc., *J. S.* Introduced with grain siftings, Barry Docks.

BORAGINACEAE.

1781. HELIOTROPIUM EUROPAEUM L. Southern Europe, N. Africa, Orient, Australia. Cardiff, *J. S.* Grangetown, Barry, Splott.

1785. CYNOGLOSSUM MONTANUM L. Europe, Orient. Cardiff, *J. S.*

1787. LAPPULA ECHINATA Gilib. (=ECHINOSPERMUM LAPPULA Lehm.). Europe, Orient. Cardiff, Grangetown, Barry, Splott. Grain alien.

1789(5). BENTHAMIA INTERMEDIA Fisch. & Mey. California. Barry.

1792. SYMPHYTUM PEREGRINUM Ledeb. Caucasus. Cadoxton, Llandaff, *H. J. R.*

1798. ANCHUSA SEMPERVIRENS L. Europe. Radyr, Llandaff.

1802. A. AZUREA Mill. (A. ITALICA Retz.). Mediterranean Region. Cardiff.

1810. ASPERUGO PROCUMBENS L. Europe, Arabia, Orient, North Asia. Cardiff, *J. S.*

1827. ECHIUM PLANTAGINEUM L. Mediterranean Region. Ballast, Cardiff, *J. S.* Barry.

CONVOLVULACEAE.

1843. CUSCUTA RACEMOSA Mart. (=C. HASSIACA Pfeff.). Brazil. On *Nepeta Mussinii*, Cardiff. Introduced with garden seed.

SOLANACEAE.

1844. LYCOPERSICUM ESCULENTUM Hill. South America. Cardiff Docks, *H. J. R.* Introduced with garden refuse.

1846c. SOLANUM NIGRUM L., var. MINIATUM (Bernh.). Barry Docks.

1846(2). S. VILLOSUM Lam. Europe. Barry; sand ballast, Radyr.

1848. S. ROSTRATUM Dunal. Mexico. Barry.

1849. S. TRIFLORUM Nuttall. North America. Cardiff, *J. S.* Splott.

1853. LYCIUM CHINENSE Mill. China. Cardiff Docks, *H. J. R.*

1855. DATURA STRAMONIUM L. Cosmopolitan. East Moors, *J. S.* Grangetown.

1857. HYOSCYAMUS ALBUS L. Europe, Orient. Shrimphouse, Cardiff, *J. S.* Barry.

SCROPHULARIACEAE.

1863. VERBASCUM VIRGATUM Stokes. Europe. Established on the railway embankment between Cardiff and Penarth.

1864. V. BLATTARIA L. Europe, North Asia. Llandaff, *Cardiff Nat. Soc. Proc.*, 1873. Barry.

1864(3). V. SINUATUM L. Mediterranean Region, Orient. Barry.

1865. V. PULVERULENTUM Vill. Southern Europe. Barry.

1866. V. LYCHNITIS L. Europe, Caucasus Region. Ballast, Cardiff, *J. S.*

1867. V. NIGRUM L. Europe. Cardiff, *J. S.* Lower Penarth, *H.* About the local docks, *A. H. T.* Radyr. A white-flowered variety occurs.

1869. V. CHAIXII Vill. Europe. Canton.

1869(2). V. OVALIFOLIUM Simms. Caucasus. Cardiff, *E. V.* A garden escape.

1874(2). LINARIA HETEROPHYLLA Desf. (=L. STRICTA Guss.). Mediterranean Region. Sand ballast, Radyr.

1877. L. PURPUREA L. Southern Europe. Ballast, Cardiff, *J. S.*

1878. L. REPENS Mill. Europe. Naturalised in abundance in many places in the district and hybridising with *L. vulgaris* Mill.

1879(4). L. REFLEXA (L.) Desf. Italy, North-West Africa. Cardiff, *G. C. D.*

1880. L. PELISSERIANA Mill. Southern Europe, Asia Minor. Ballast, Cardiff, *J. S.*

1881. L. CAESIA DC. Spain. Ballast, Cardiff, Penarth, *J. S.*

1882. L. SUPINA Desf. Mediterranean Region. Ballast, Cardiff, *J. S.*

1889. ANTIRRHINUM MAJUS L. Mediterranean Region. Cardiff, Llandaff, *H. J. R.* Penarth Ferry, *J. S.*

1890. A. ORONTIUM L. Europe, Asia Minor, North Africa. Sand ballast, Radyr.

1895. SCROPHULARIA SCORODONIA L. North Africa and Asia, Europe. Established at Cardiff Docks.

1895(2). S. SCOPOLII Hoppe. Eastern Europe, Asia Minor, Himalayas. Cardiff, *G. C. D.*

1896. S. CANINA L. Europe, Asia Minor, North Africa. Cardiff Docks. b. *pinnatifida* (Brot.). Cardiff Docks. Both type and variety quite established.

1896(2). S. HOPPII Koch. Europe. Persisted for several years at Radyr.

LABIATAE.

1991. MENTHA SPICATA L. Europe, North Africa, North Asia. Cardiff, *J. S.*

2017. MELISSA OFFICINALIS L. Mediterranean Region, Orient. Cardiff, *N. B. G.* Cadoxton, *H. J. R.* Penarth, Radyr.

2024. SALVIA SYLVESTRIS L. East Europe, North Asia. Barry, Cadoxton.

2031. S. VERTICILLATA L. South Europe, Orient. Radyr, Cardiff, Barry. Naturalised.

2047. MELITTIS MELISSOPHYLLUM L. Europe. Ballast, Cardiff, *J. S.*

2048. SIDERITIS MONTANA L. Mediterranean Region, Orient. Penarth, Cardiff, *J. S.* Grangetown.

2053. STACHYS ITALICA L. Mediterranean Region. Cardiff, *J. S.*

2059. S. ANNUA L. Europe. Cardiff, *E. V.* Radyr, Grangetown.

2059(2). S. RECTA. South Europe. Barry. Naturalised.

2065. LEONURUS CARDIACA L. North Temperate Regions. Cardiff.

2069. LAMIUM MACULATUM L. Europe, Orient. Garden escape. Penarth, *J. S.*

PLANTAGINACEAE.

2088. PLANTAGO PSYLLIUM L. Mediterranean Region, Orient, North-West India. Cardiff, *J. S.*

2099. P. INDICA L. (P. RAMOSA Asch. = P. ARENARIA W. & K.). Europe, Asia Minor, North-West India. Penarth, *Herb. Babington*; Cardiff. Naturalised.

2095. P. LAGOPUS L. Mediterranean Region, Orient. Introduced with grain siftings, Splott.

ILLECEBRACEAE.

2103. HERNIARIA GLABRA L. Europe, North Asia. Ballast, Cardiff, *J. S.*

2104. H. CILIATA Bab. Europe. Ballast, Cardiff, *J. S.* Barry. Established.

2105. H. HIRSUTA L. Europe, Asia Minor, East India. Ballast, Cardiff, *J. S.*

2108. SCLERANTHUS PERENNIS L. Europe. Ballast, Cardiff Docks, *J. S.*

AMARANTACEAE.

2110. AMARANTHUS RETROFLEXUS L. North America. Cardiff, Penarth, *J. S.* Splott, Barry. Established in the latter place. var. *Delilei* Thell. Cardiff.

2111. A. BLITUM L. Temperate and Tropical Regions. Cardiff, Penarth, Barry, *J. S.*

2112. A. ALBUS L. North America. Cardiff. Established for some years. Splott.

2114. A. CHLOROSTACHYS Willd. Europe, Orient, East India. Cardiff, Splott.

CHENOPODIACEAE.

2120. CHENOPODIUM HYBRIDUM L. North Temperate Region. Cardiff, *J. S.* Splott.

2121. C. URBICUM L. Europe, North Asia. Ballast, Cardiff, *J. S.* Splott.

2122. C. MURALE L. Europe. Leckwith, Cardiff Docks, Splott.

2123. C. OPULIFOLIUM Schrad. Europe. Radyr. Common at Barry, Splott.

2125. C. LEPTOPHYLLUM Nutt. North America. Cardiff, Splott. Introduced with grain siftings.

2126. C. FICIFOLIUM Sm. Europe. Ballast, Cardiff, *J. S.*

2127. C. GLAUCUM L. Europe. Penarth, *J. S.* Splott.

2128. C. VULVARIA L. Europe, North Asia. Barry (in some quantity), Radyr, Splott.

2130. C. AMBROSIOIDES L. Europe. Barry, Cardiff. b. *suffruticosum* (Willd.). Barry.

2131. C. BOTRYS L. Europe. Cardiff, *J. S.*

2131(2). C. STRIATUM Kras. Europe. Cardiff, Barry.

2134. C. VIRGATUM Thunb. Japan. Splott.

2135. ROUBIEVA MULTIDIFA Moq. South America. Radyr, Cardiff, Barry.

2137. BETA VULGARIS L. Europe, North Africa, Orient. Barry, Splott. Introduced with garden refuse.

2145. ATRIPLEX TATARICA L. Central Asia. Cardiff, *E. V.* Barry. Probably introduced with grain siftings.

2153(10). AXYRIS AMARANTHOIDES L. North Asia. Introduced with grain siftings, Splott.

PHYTOLACCACEAE.

2168(2). PHYTOLACCA DECANDRA L. North America. Cardiff Docks.

POLYGONACEAE.

2183. POLYGONUM BELLARDI All. Mediterranean Region, Caucasus. Introduced with grain siftings, Splott, Barry.

2191. P. CUSPIDATUM Sieb. & Zucc. Japan. A garden escape established in several places.

2192. FAGOPYRUM SAGITTATUM Gilib. (=F. ESCULENTUM Moench). North Asia, Europe. Splott, Cardiff, Barry. A chicken-food or grain sifting alien at Cardiff.

2193. F. TATARICUM Gaertn. Europe, North Asia. Barry.

2205. RUMEX PULCHER L. Europe, Orient. East Moors, *J. S.* Cathays Park, *E. V.* Splott.

2207. R. MARITIMUS L. Temperate and Sub-Tropical Regions. Ballast, Barry, *A. H. T.* Cardiff, *H. J. R.* Splott.

2210(6). R. SALICIFOLIUS Weinm. North America. Introduced with grain siftings, Splott, Cardiff Docks.

2210(12). R. MAGELLANICUS Gris. South America. Cardiff, *G. C. D.*

2210(13). R. OBOVATUS Danser. South America. Introduced with grain siftings, Splott.

SANTALACEAE.

2218. THESIUM HUMIFUSUM DC. Europe. Barry. Established.

EUPHORBIACEAE.

2229. EUPHORBIA ESULA L. Europe. Cardiff Docks, *H. J. R.*

2229(2). E. VIRGATA W. & K. Europe. Barry, Radyr. Established in both places.

2230. E. CYPARISSIAS L. Europe. Cardiff Docks.

2234. E. FALCATA L. Mediterranean Region. Cardiff, *J. S.*

2236. E. PALUSTRIS L. Europe. Barry. Has persisted for four or five years.

2240. RICINUS COMMUNIS L. Tropical Regions. Barry.

2243. MERCURIALIS ANNUA L. Europe. North Africa. Abundant on waste ground, Leckwith, Grangetown, Barry.

URTICACEAE.

2247(2). HUMULUS JAPONICA Sieb. & Zucc. Japan. Cardiff, *J.S.*

2248. CANNABIS SATIVA L. Central Asia, North-Western Himalaya. Penarth Ferry, Cardiff, *J. S.* Dinas Powis.

2251. URTICA PILULIFERA L. Mediterranean Region, Orient, East India. Ballast, Cardiff, Penarth, *J. S.*

2253(5). HELXINE SOLEIROLII Req. Corsica, Sardinia. Foot of a wall, Penylan. Persisted for several years.

HYDROCHARIDACEAE.

2298. Elodea canadensis Michx. North America. Common in ponds and streams throughout the district.

IRIDACEAE.

2360. Sisyrinchium angustifolium Mill. North America. Cardiff, *H. J. R.*

AMARYLLIDACEAE.

2372. Narcissus biflorus Curt. Europe. Penarth, *Cardiff Nat. Soc. Proc.* 1893. Barry, *D.*

2373. N. poeticus L. Europe. Llanishen Reservoir, *J. S.* Cathays Park, *W. W. Pettigrew.*

2375. N. Tazetta L. Mediterranean Region. Near Penarth Ferry, *J. S.*

LILIACEAE.

2390. Asphodelus fistulosus L. Mediterranean Region, Orient. Barry.

2408. Hyacinthus comosus L. (=Muscari comosum Mill.). Mediterranean Region, Orient. Barry.

2413. Ornithogalum umbellatum L. Europe, Asia Minor, North Africa. Cooper's Fields, *J. S.*

JUNCACEAE.

2441. Juncus tenuis Willd. Europe, Western India, Australia. Cardiff Docks. Also occurred at Aberdare in 1903, where seeds were probably introduced attached to pit props, which had lain at Cardiff Docks.

PALMACEAE.

2459. Phoenix dactylifera L. North Africa, Arabia. Introduced with town refuse, Splott. (Seedlings.)

CYPERACEAE.

2528(2). Cyperus declinatus Moench (=C. vegetus Willd.). Chili. Penarth Ferry, *J. S.*

GRAMINACEAE.

2631(2). Paspalum dilatatum Poir. Brazil. Cardiff.

2632. PANICUM CRUS-GALLI L. Europe. Penarth, *J. S.* Cardiff, Barry, Splott.

2634. P. SANGUINALE L. (=DIGITARIA SANGUINALIS Scop.). Cosmopolitan. Established at Cardiff.

2635. P. ISCHAEMUM Schreber (GLABRUM Gaud). North Temperate and Tropical Regions. Cardiff, Penarth, *J. S.*

2636. P. MILIACEUM L. Central Asia. Penarth, Cardiff, *J. S.* Splott.

2636(2). P. MAXIMUM Jacq. Tropical America, India. Introduced with grain siftings, Splott.

2637. P. CAPILLARE L. South and North America. Radyr, Barry.

2639. SETARIA VIRIDIS Beauv. Cosmopolitan. Cardiff, Penarth, *J. S.* Barry, Splott, Radyr. Probably introduced with grain siftings.

2640. S. GLAUCA Beauv. Temperate Asia, Europe. Penarth, *J. S.* Barry, Splott, Cardiff, Radyr. Probably introduced with grain siftings.

2641. S. VERTICILLATA Beauv. Cosmopolitan. Cardiff, Penarth, *J. S.* Splott.

2644(2). BECKMANNIA ERUCAEFORMIS Host. Europe, Temperate Asia, North America. Introduced with grain siftings, Splott.

2645. ZEA MAYS L. Paraguay. Cardiff, Barry. Introduced with ship sweepings.

2650. PHALARIS AQUATICA L. Europe. Cardiff, *J.S.*

2651. P. CANARIENSIS L. Europe, North Africa. Barry, Cardiff, Splott. Introduced with grain siftings and town refuse.

2653. P. MINOR Retz. Greece, Orient, South Africa. Barry, Cardiff, Splott. Doubtless introduced with grain siftings.

2654. P. PARADOXA L. Mediterranean Region, Orient. Penarth, *J. S.* Cardiff, Splott. A grain-sifting introduction.

2660. PALLASIA ACULEATA (L.) Dr. (=CRYPSIS ACULEATA Ait.). Europe. Cardiff, *J. S.*

2662(2). SPOROBOLUS ARGUTUS Kunth. Brazil. Cardiff.

2668. ALOPECURUS UTRICULATUS Pers. Europe, Orient. Cardiff, *J.S.* Barry.

2669(20). PIPTATHERUM MULTIFLORUM Beauv. Europe. Cardiff and Barry Docks.

2672. HELEOCHLOA SCHOENOIDES Host. Mediterranean Region, Persia. Cardiff, *J. S.*

2677. PHLEUM PHLEOIDES Simonk. Europe, North Asia. Ballast, Cardiff, *J. S.*

2683. AGROSTIS VERTICILLATA Vill. Europe. Barry. Established.

2690. POLYPOGON MONSPELIENSIS Desf. Europe. Barry, Cardiff, Splott. Naturalised by a pond at Cardiff Docks.

2692. P. LITTORALIS Sm. (=P. MONSPELIENSIS × AGROSTIS ALBA). Europe. Cardiff. Growing with the parent plants in some abundance.

2697(2). DEYEUXIA RETROFRACTA Kunth. Australia, New Zealand. Barry.

2698. GASTRIDIUM VENTRICOSUM S. & T. (=G. LENDIGERUM Gaud.). Europe, Mediterranean Region. Penarth, Cardiff, *J. S.* Barry. Introduced with ballast.

2699. APERA SPICA-VENTI Beauv. Europe, Orient. Cardiff, *H. J. R.* Grangetown, Penarth Ferry, *J. S.*

2700. A. INTERRUPTA Beauv. South Russia, Orient. Grangetown, Penarth Ferry, *J. S.* Cardiff Docks.

2704. LAGURUS OVATUS L. South Europe, North Africa. Penarth Ferry, Grangetown, *J. S.*

2717. AVENA FATUA L. Europe, Orient, North Asia. Barry, Cardiff, Splott. b. *glabrata* (Peterm.). Cardiff, *G. C. D.*

2719. A. STRIGOSA Schreber. Europe. Cardiff, Splott. Introduced with ship sweepings and grain siftings. Sub-sp. *verna* Marq. Cardiff, *E. V.*

2720. A. SATIVA L. Cultivated. Cardiff, Barry, Splott. Introduced with grain siftings.

2726. GAUDINIA FRAGILIS Beauv. Mediterranean Region. Shore near Barry, *H. J. R.* Cardiff, Barry.

2727. CAPRIOLA DACTYLON (L.) Druce (=CYNODON DACTYLON Pers.). Cosmopolitan. Cardiff. Naturalised. Splott.

2737. CYNOSURUS ECHINATUS L. Europe, Orient. Cardiff, *J. S.* Grangetown, Barry. Introduced with grain siftings.

2747. ERAGROSTIS CILIANENSIS V.-L. Europe. Cardiff.

2755. BRIZA MAXIMA L. Mediterannean Region, South Africa. Sand ballast, Radyr, Cardiff.

2760. Poa palustris L. North Temperate Region. Cardiff Docks, *H. J. R.* Introduced with grain siftings, Splott.

2789. Festuca ligustica Danth. Europe. Introduced with grain siftings. Splott.

2794. Bromus rigens L. (=B. maximus Desf.). Mediterranean Region. Europe, Caucasus. Cardiff, Barry.

2795. B. rigidus Roth. Europe, Mediterranean Region. Caucasus. Cardiff, *H. J. R.*

2797. B. tectorum L. Europe, Orient, North Asia. Barry, Cardiff Docks. Introduced with grain siftings, Splott.

2798. B. madritensis L. Europe, North Africa, Orient. Cardiff, *H. J. R*

2799. B. rubens L. Mediterranean Region. Cardiff, *J. S.*

2803. B. unioloides H. B. K. America. Barry, Cardiff. Introduced with grain siftings.

2806. B. secalinus L. Europe, Mediterranean Region, North Asia. Cardiff, *J. S.* Barry. b. *velutinus* (Schrad.). Cardiff, *H. J. R.*

2809. B. arvensis L. Europe, Orient, North Asia. Cardiff, *H. J. R.*

2817. B. japonicus Thunb., var. grossus Asch. & Graebn. Europe. Cardiff Docks, *H. J. R.*

2821. Lolium temulentum L. Europe, North Asia. Cardiff, Splott. Introduced with grain siftings. b. *arvense* (With.). Cardiff, *H. J. R.* Splott.

2835. Secale cereale L. Orient. Cardiff, Barry. Introduced with grain siftings.

2836. Triticum ovatum Rasp. Europe. Cardiff, *J. S.*

2838. T. triunciale Rasp. Europe. Cardiff, *J. S.*

2844. T. aestivum L. (=vulgare Vill.). Cultivated. Introduced with grain siftings and town refuse. Cardiff.

2846. Lepturus incurvus (L.) Dr. Europe. Cardiff, *H. J. R.* Barry.

2846(2). L. cylindricus Trin. Mediterranean Region. Barry.

2851. Hordeum jubatum L. North and South America. Cardiff, Splott.

2852. H. vulgare L. Cultivated. Introduced with town refuse and grain siftings. Cardiff.

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THE BOTANICAL SOCIETY AND EXCHANGE CLUB OF THE BRITISH ISLES.

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OF THE

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(CONVENIENTLY ABBREVIATED REP. B.E.C.)

BY THE

EDITOR AND DISTRIBUTOR,

H. DOWNES, Esq., M.B., F.L.S., F.G.S.

VOL. VII. PART VI.

PUBLISHED BY
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(VOL. VII. PART VI).

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PRINTED BY T. BUNCLE & CO., ARBROATH.
JUNE 1926.

REPORT OF THE DISTRIBUTOR FOR 1925.

THE number of sheets of plants received for this distribution was somewhat below the average, not greatly exceeding the number for 1924. A larger number of specimens might have been looked for, the summer of 1925 having been a vast improvement on its predecessor, but the names of several regular contributors are absent, though we have pleasure in welcoming several new contributing members.

At the same time, the Distributor feels impelled to express the view, which in fact is shared by some of our best known members, that many gatherings might well have been dispensed with. A plant that is commonly found in nearly every vice-comital district in the country is of little use for distribution in a society comprising many veteran collectors. It is a pity that the ultimate fate of, say, twenty sheets of carefully prepared specimens, should be the incinerator, in consequence of the species being too common to be in demand.

The condition of the specimens as a whole was fair, but greater care in arranging and drying is still needed. More attention to neat and accurate labelling is required, and a uniform style of label would be an advantage. Occasionally a badly written and illegible scrap, with the edges apparently torn, not cut, accompanies the sheet of specimens. Quality rather than quantity should be the aim of every contributor, and the tendency to send "anything rather than nothing," on the chance that inferior or commonplace specimens may possibly be of some use to somebody, only adds to the labours of the Distributor without any corresponding advantage.

Members are once more deeply indebted to the Referees who have so readily given of their stores of knowledge. Rev. H. J. Riddelsdell, Lt.-Col. Wolley-Dod, Messrs Fraser, Jackson, Bennett, Howarth, Cryer, Lumb, Pearsall, Britton, Drabble, Salmon, and others, have been kind and prompt in giving their assistance.

On his own behalf the Distributor has to acknowledge much kind and sympathetic assistance from many correspondents.

H. DOWNES.

THE GRANGE, MARTOCK, SOMERSET.

LIST OF PARCELS RECEIVED.

	No. of Specimens.
L. Arsène,	193
W. Biddiscombe,	54
Miss R. Bright.	14
C. E. Britton,	196
G. C. Brown,	251
Rev. G. R. Bullock-Webster,	81
Rev. R. J. Burdon,	76
J. Cryer,	110
L. Cumming,	107
H. Downes,	32
G. C. Druce,	638
J. Fraser,	83
L. B. Hall,	99
Miss I. M. Hayward.	8
T. J. Jenkin,	24
H. H. Johnston,	312
J. E. Little,	218
R. Melville.	135
National University of Wales,	101
W. H. Pearsall,	49
Rev. H. J. Riddelsdell,	739
F. Rilstone,	56
Miss I. M. Roper,	116
C. E. Salmon,	26
W. A. Sledge,	48
R. L. Smith,	137
C. Waterfall,	239
J. W. White,	203
Miss A. Wilkinson.	12
A. Wilson,	83
Lt.-Col. A. H. Wolley-Dod,	17
	4457

Ranunculus Flammula L. Bullingdon Bog, Oxon, June 1923.—G. C. Druce.

Ranunculus ——, forma *apetalus*. Strathpeffer, E. Ross, July 1925.—G. C. Druce. "A very remarkable form, apparently producing no petals but showing plenty of hairy fruits, and evidently growing under abnormal conditions which need investigation on the spot. The plant has the long, tapering, fruiting peduncles and subglobular hairy receptacles of *R. circinatus*, but the submerged leaves and the carpels are more like those of *R. trichophyllus*. I am unable, on the poor material submitted, to go further than this. I should be pleased to see flowers—if or when produced—and to receive notes on the habitat conditions (especially as to any fluctuations of water-level during the flowering period) from any member resident in, or visiting, the neighbourhood."—Pearsall. "The conditions in which it grew were normal, but all the plants in this piece of water were apetalous. There was plenty of water in the pond, and a careful search was made for a petalloid plant."—Druce.

Ranunculus trichophyllus Chaix. f. *Godronii* (Gren.). Rhine, Lawrence Weston, W. Gloster, v.-c. 34, May 20, 1925.—Miss Ida M. Roper. "Excellent examples of this form. These sheets show what can be done with aquatic plants by those who will take the necessary trouble to keep them moist until floated out and finally pressed. Very few Batrachia (and fewer still of the Potamogetons) justify their labels and are worth preserving. These show the plant's habit, flowers, and mature fruits; the leaves are particularly well displayed, and evince great care in preparation."—Pearsall.

Caltha palustris L. Port Meadow, Oxon, June 1893.—G. C. Druce.

Papaver Rhoeas L., var. [Ref. No. BB. 94.] Bury, Suffolk, June 1925.—G. C. Druce. "Poor material, but foliage agrees with var. *caudatifolium* Fedde, although a ripe capsule is necessary to make certain."—Miss I. M. Roper. "Yes, this is *caudatifolium* Fedde."—Druce.

Roemeria hybrida DC. Zahle, Lebanon, Syria, April 1925.—G. C. Druce.

Fumaria Boraei Jord. Abundant as a garden weed at Minehead, W. Somerset, June 19, 1925. Mr Pugsley tells me that this is very near his f. *elongata*, described in *J.B. Suppl.*, January 1912, p. 26: and that he had noticed it at Minehead many years ago. A very lax, diffuse plant, with rather few-flowered racemes.—J. W. White.

Fumaria Bastardi Bor. = *F. confusa* Jord. Waste groun Beechlands, Belfast, Co. Antrim, August 21, 1924. Determined Mr Pugsley, who considers this to be the most widely distribut species in Ireland.—J. W. White.

Radicula sylvestris Druce. Marston, Oxon, July 1925.—G. C Druce.

Arabis hirsuta Scop. Roadside bank, Llanarmon, Denbigh v.-c. 50, June 6, 1925.—C. Waterfall. Peat Fen, Wood Walton Hunts, July 1920. On peat land, an unusual habitat.—G. C. Druce

Erophila verna E. Meyer. Top of old wall, Bwlch Gwyn, Wrexham, v.-c. 50, May 1925.—C. Waterfall.

Sisymbrium officinale Scop., var. *leiocarpum* DC. Woking, Surrey.—W. Biddiscombe.

Diplotaxis tenuifolia DC. Waste ground, Midland Railway siding, Malvern, v.-c. 37, June 25, 1925.—C. Waterfall.

Bursa anglica (At.). Basildon, Berks, June 1925.—G. C. Druce. "I agree that this is identical with *Capsella B.-p.* (L.) *anglica* E. At."—Britton.

Lepidium Draba L. Waste ground, railway siding, Malvern, Worcester, June 25, 1925.—C. Waterfall.

Lepidium perfoliatum L. Waste ground, Cardiff Dock, v.-c. 41, June 7, 1925.—R. Melville.

Viola canina × *montana*. Wood Walton, Hunts, July 1925. This grew in considerable quantity in a locality which yields both the parents; it was very floriferous.—G. C. Druce. Teste E. Gregory.

Viola tricolor L., sub-species *genuina* Wittrock, var. *faeroensis* (W. Becker) C. H. Ostenfeld, in *Botany of the Faeroes*, part iii., page 856, 1908 (*fide* C. H. Ostenfeld, September 7, 1925). Oatfield, at 160 feet, Millfield, south-west side of Cairston Mill Pond, Stromness, Orkney, August 14, 1925. [Ref. No. 3157.] Not native, a weed of cultivation, common. Plants in flower and ripe and unripe fruit. Two upper petals violet; two lateral petals bluish-purple, with 3-4 dark violet lines; lower petal bluish-purple, with 7 dark violet lines, and a yellow base; spur of lower petal cylindrical, dark purple, longer than the calycine appendages. "A little darker in the petals than the type, otherwise agreeing well with it" (*fide* C. H. Ostenfeld, September 7, 1925).—H. H. Johnston. "What Col. H. H. Johnston says is probably correct. This adds a new name to our list, but I am by no means convinced that it adds a new plant. Wittrock's naming of the pansies was peculiar. It seems to me that he neglected much previous work and gave several names to plants that are essentially the same. I hope to deal in the near future with Wittrock's Scandinavian pansies when considering our Scottish plants."—DRABBLE.

Viola tricolor L., sub-species *genuina* Wittrock, var. *faeroensis* (W. Becker) C. H. Ostenfeld, in *Botany of the Faeroes*, part iii., page 856, 1908 (*fide* C. H. Ostenfeld). Oatfield, at 160 feet, Millfield, south-west of Cairston Mill Pond, Stromness, Orkney, August 14, 1925. [Ref. No. 3158.] Two upper petals violet; two lateral petals bluish-purple, with 3-4 dark violet lines; lower petal white, with 7 dark violet lines, bluish-purple margin, and a yellow base; spur of lower petal cylindrical, dark purple, longer than the calycine appendages. "Agrees well with typical specimens from the Faeroes" (*fide* C. H. Ostenfeld, September 7, 1925).—H. H. JOHNSTON.

Note.—It is most probable that many specimens of *Viola tricolor* L., collected by me in Orkney between 1874 and 1921, and recorded as "*Viola Lloydii* Jordan," "*Viola variata* Jordan," and "*Viola lepida* Jordan" (*fide* W. G. Travis), in *Trans. Bot. Soc. Edin.*, vol. xxviii., part iii., pp. 101-102 (1922), and *Rep. B.E.C.* for 1922, vol. vi., part vi., p. 828 (May 1923), really belong to *V. tricolor* L., sub-species *genuina* Wittrock, var. *faeroensis* (W. Becker) C. H. Ostenfeld, *l.c.* See *Trans. Bot. Soc. Edin.*, vol. xxix., part ii., p. 154 (1925). In *Rep. B.E.C.* 1922, vol. vi., part vi., p. 828 (May 1923), for "*V. arvensis* Murray, var. *obtusifolia* (Jord.), fide W. G. Travis" read "*V. derelicta* Jord."—H. H. J.

Viola Deseglisei Jord. [Ref. No. 2812.] Wotton, Surrey, v.-c. 17, July 25, 1925.—C. E. BRITTON. "This plant certainly has the habit of *Deseglisei*, but it lacks the purple colour in the sepaline appendages, and the somewhat coriacious texture of the leaves generally characteristic of that plant. I think it must be called *segetalis*." —DRABBLE.

Viola ——. [Ref No. BB 409.] Chipping Norton, Oxon, July 1923.—G. C. DRUCE. "*V. ruralis* Jord."—DRABBLE.

Viola ——. [Ref. No. 100.] Bury, Suffolk, June 1925.—G. C. DRUCE. "*V. obtusifolia* Jord."—DRABBLE.

Viola segetalis Jord. Stibbington, Hunts, June 1912.—G. C. DRUCE. "Yes."—DRABBLE.

Dianthus gallicus Pers. Maritime sands, St Ouen's Bay, Jersey, July 7, 1925.—L. ARSENE. "The exquisitely prepared and mounted specimens of this new contributing member are a pleasu to handle."—DOWNES.

Silene nutans L. On limestone cliffs, Eyam, near Sheffiel Derbyshire, June 21, 1925.—M. GODBER; comm. RUTH BRIGHT.

Cucubalus baccifer L. At Mr Robinson's locality, Merton, v.-c 28, July 30, 1925. Too early to see it at its best.—H. J. RIDDELSDELL.

Cerastium vulgatum L. [Ref. No. 2267.] Maritime form foreshore, Beacon Hill, St Osyth, N. Essex, v.-c. 19, May 17, 1925 In abundance on foreshore and weathered London Clay. A strong growing maritime form with large flowers and deep green foliage Quite distinct in facies from the inland plant.—G. C. BROWN.

Cerastium tetrandrum Curtis (*fide* C. E. Salmon). Grassy, shell-sandy banks at seashore, 10 feet above sea-level, Linksness, Hoy, Orkney, June 11, 1925. [Ref. Nos. 2978 and 3115.] June 11 and July 25, 1925. Flowers tetramerous and pentamerous in same plant. Petals white, with pale yellow base. Capsules pale brown, straight or slightly curved in same plant, 8-toothed and 10-toothed in same plant. H. H. JOHNSTON.

Note.—All my specimens of Ref. Nos. 2978 and 3115 were collected from the same small piece of ground, five feet long by three feet broad; and from the same station as my specimens of Ref. No. 683, in full flower June 10, 1920, which latter were named "*Cerastium subtetrandrum* Murbeck" by Mr C. E. Salmon and Mr E. G. Baker on January 20, 1921, and exhibited by Mr C. E. Salmon at a meeting of the Linnean Society on March 16, 1922. Mr C. E. Salmon, however, in a note dated October 16, 1925, informs me that Prof. S. Murbeck will not pass my specimens of Ref. No. 683, from Hoy, nor those of my Ref. Nos. 673, 677, and 770, from South Ronaldshay and Mainland, as *Cerastium subtetrandrum* Murbeck, but calls them all *Cerastium tetrandrum* Curtis. I am indebted to Mr C. E. Salmon for the following remarks on Ref. Nos. 2978 and 3115, October 16, 1925: "I presume these two numbers represent the same plant in flower and fruit? It is very instructive. The flowering specimens, with their close compact infloresecences, remind one of *C. subtetrandrum* Murb., but the fruiting examples show the infloresecence springing from low down the stems. You will see, by enclosed note" (referred to by me above—H. H. J.) "that Murbeck cannot pass any of your Orkney plants as *subtetrandrum*, so I suggest they must *all* be placed under *tetrandrum*, perhaps as a variety? This applies to the present specimens." Flowering specimens of my Ref. No. 670 from Scapa Bay, Saint Ola, Mainland, Orkney, June 1, 1920, have close compact infloresecences, and they were named "*C.*

subtetrandrum Murbeck " by Mr C. E. Salmon on March 25, 1922, while fruiting specimens of my Ref. No. 1792 from the same station, June 24, 1922, show the inflorescences springing from low down the stems, and they were named "*C. tetrandrum* Curtis " by him in January 1923. The above differences in the flowering and fruiting inflorescences in my Linksness and Scapa Bay specimens do not exist in other specimens of *C. tetrandrum* Curtis, collected by me at other stations in Orkney, in which latter specimens the flowering inflorescences are not compact, but are like those of the fruiting plants.—H. H. J.

Stellaria media L., var. *Boraeana* (Jord.). [Ref. No. 2266.] In abundance on foreshore at Beacon Hill, St Osyth, N. Essex, v.-c. 19, May 17, 1925.—G. C. BROWN.

Arenaria leptoclados Guss. Arable field, Old Down, Tockington, W. Gloster, v.-c. 34, May 12, 1925.—Miss IDA M. ROPER. "A very interesting state which, from its appearance when pressed, seems practically prostrate; it also seems to be setting no good fruit. This form is not unlike a plant the late E. A. Woodruffe Peacock sent me from Manton labelled *A. serpyllifolia*, f. *Hibaldstowensis*. He described it as growing ' quite flat on the ground like a mat,' but his form, unlike Miss Roper's, was 'a late autumnal or wet season form—in dry seasons only found in October—in wet ones in August. For ten years I could not take it in flower.' I hope Miss Roper will observe whether the capsules *are* really barren?"—SALMON.

Arenaria uliginosa Schleich. Widdy Bank, v.-c. 66, alt. 1600 feet, July 8, 1920.—J. CRYER.

Sagina scotica Dr. Glen Dole, Forfar, July 1922.—G. C. DRUCE.

Elatine hexandra DC. Abundant on the shore of Llyn Cliwythlyn, Denbigh, v.-c. 50, alt. 900 feet, August 20, 1925.—A. WILSON. " I think a New County Record."—DRUCE.

Hypericum hirsutum L. Near Powick, Worcs., v.-c., 37, June 30, 1925.—C. WATERFALL.

Hypericum dubium Leers. Dryburgh Glen, Tweedside, v.-c. 80, August 1925. Previously found by me near Earlston, Berwickshire, (*not* Easton, Roxburghshire, as in *Rep. B.E.C.* 435, 1924). Searching in the old locality I have failed to find it, but have discovered a clump of the plants in Dryburgh Glen, Roxburghshire.—Miss IDA M. HAYWARD. " Mr Salmon thought the Earlston plants were of hybrid origin."—DRUCE.

Hypericum linarifolium Vahl. Heaths, dry hillsides, Noirmont, Jersey, August 30, 1925.—L. Arsene.

Hypericum elodes L. Near the shore of Llyn Cliwythlyn, Denbigh, v.-c. 50, alt. 900 feet, September 2, 1925.—A. Wilson. "Less hairy than usual f. *glabratum*. See *Rep. B.E.C.* 435, 1924."—Druce.

Malva moschata L. Field near Malvern Station, Worcs., v.-c. 37, July 8, 1925.—C. Waterfall.

Geranium pusillum L., var. *albiflorum*. King's Cliff, near Northampton. [Ref. No. BB 77.]—G. C. Druce. Cont. G. W. Shann.

Impatiens parviflora DC. Pusey Wood, Berks, June 1893.—G. C. Druce.

Genista tinctoria L. Roadside near Madresfield, Worcs., v.-c. 37, July 3, 1925.—C. Waterfall.

Ulex Gallii Planch. With abnormal flower-buds caused by *Asphondylia ulicis* Verrall. Parkstone, Dorset, September 4, 1925.—L. B. Hall. "This gall caused by a dipteron was first recorded for Britain from Flintshire in 1919. It is common on *U. eurpaeus*."—Miss I. M. Roper.

Ononis repens L. [Ref. Nos. 2798, 2799, and 2800.] Llandrillo-yn-Rhos, Denbigh, v.-c. 50, July 15, 1925. Three forms represented—2798, with stems procumbent and unarmed; 2799 with stems procumbent and branches strongly spinose; and 2800, with stems erect, leafy, and scarcely spinose. These forms appear to be *states* only, dependent on the character of the stations affected by them, the most spinose forms occurring on a shingle beach, and the unarmed form characterising the soil further inland.—C. E. Britton.

Medicago orbicularis All. Waste ground, Barry Dock, v. c. 41, May 31, 1925.—R. Melville. "Yes."—Thellung.

Medicago sp. Waste ground, Cardiff Dock, v.-c. 41, May 29, 1925.—R. Melville. "This is *M. apiculata*, var. *confinis* Koch =*M. polycarpa*, var. *tuberculata* G. & G. The pods are not fully developed."—Miss I. M. Roper. "Var. *confinis* Burnat."—Thellung.

Medicago praecox DC. Waste ground, Bradford, v.-c. 64, September 26, 1925. Probably the last gathering from this ground.

which is being converted into allotments.—J. CRYER. "Yes."—THELLUNG.

Melilotus officinalis Lam. (*altissima* Thuill.). Powick, Worcs. v.-c. 37, June 30, 1925.—C. WATERFALL.

Trifolium ochroleucon Huds. Upton, Hunts, June 1925.—G. C. DRUCE.

Trifolium Molinerii Balb. Dry rocky places, Portelet Bay, Jersey, June 16, 1925.—L. ARSENE.

Trifolium procumbens L., var. *majus* Koch (?). [Ref. No. 2265.] London Clay Cliffs, Walton-on-the-Naze, N. Essex, v.-c. 19, June 14, 1925. Flower-heads golden-yellow, and with over 40 flowers, peduncles mostly about equalling leaves. Not extreme, but noticed at this and other spots in the cliffs for a number of years. —G. C. BROWN. "*T. procumbens*, type, I should call it."—DOWNES. "Type. The flower-heads are too small and pale-coloured for the variety, and the seeds lack the necessary radicle."—Miss I. M. ROPER.

Dorycnium rectum DC. Waste ground, Barry, v.-c. 41, August 8, 1925. Specimens taken from two large plants that first appeared four years ago. Every year there is abundance of flowers, but very little fruit, none of which ripens. Only report for Great Britain. Native of South Europe and North Africa.—R. L. SMITH. "Yes." DRUCE.

Ornithopus perpusillus L. Bank in Happy Valley, Malvern, v.-c. 37, June 13, 1925.—C. WATERFALL.

Prunus insititia L. [Ref. No. 2732.] Burgh Heath, Surrey, v.-c. 17, April 26 and September 27, 1925.—C. E. BRITTON. "I doubt this being *insititia*. I think it must be one of the many forms of *P. domestica*, its very round and more hairy leaves take it away from the Bullace."—DRUCE. Mr FRASER considers it is form of *domestica*.

[*Note*.—In the Notes on Riddelsdell's Rubi, "B. & R." indicates Barton and Riddelsdell's agreement as to the name, including any comments which may modify its strict use.]

Rubus suberectus Anderss. [Ref. No. 1082.] Chepstow Park, v.-c. 35, July 2, 1925.—H. J. RIDDELSDELL. "The older name is *R. nessensis* Hall. Andersson, in naming *suberectus*, says his plant is identical."—DRUCE.

Rubus sulcatus Vest. [Ref. No. 1083.] Boar's Hill, Berks, v.-c. 22, July 6, 1925, with G. C. Druce. A well known locality.—H. J. Riddelsdell.

Rubus plicatus Whe. and Nees. [Ref. No. 1084.] Hargham, W. Norfolk, v.-c. 28, July 31, 1925. In great quantity. Flowers frequently pink.—H. J. Riddelsdell.

Rubus Briggsianus Rogers. [Ref. No. 381.] Rocky hillside, Langreek, Polperro, v.-c. 2, July 20, 1925.—F. Rilstone. "This is *R. affinis* Weihe and Nees, var. *Briggsianus* Rog. I have looked at every sheet, but not found any need to examine all critically."—Riddelsdell.

Rubus holerythros Focke. [Ref. No. 1086.] Shotover Hill, Oxon, v.-c. 23, July 7, 1925, with G. C. Druce. I think this is right, for although there is some suggestion of *R. affinis* in the leaves, the weight of evidence, especially in prickles, favours *holerythros*. New to Oxon. Also from Witley Common, Surrey [Ref. No. 1104].—H. J. Riddelsdell.

Rubus latifolius Bab. [Ref. No. 385.] Lane near Callestick, v.-c. 1, August 1925.—F. Rilstone. "Yes, nearly typical (as I understand *R. latifolius* Bab.), but it is a difficult species."—Riddelsdell.

Rubus imbricatus Hort. f. [Ref. Nos. 1146, 1147, 1149, 1150, 1151, 1094, 1102.] About Norwich, v.-c. 27, and Hargham and Merton, v.-c. 28, July 1925. This form grows in quantity about Norwich, and tempts one all the time to pass it over as an aberrant *pulcherrimus*. But it is actually *imbricatus*, a form between type and var. *londinensis*. It is fairly constant, only occasionally close to either type or var. New County Record for v.-c. 27 and 28 (under *R. imbricatus*).—H. J. Riddelsdell. B. & R.

Rubus carpinifolius Whe. and Nees. [Ref. No. 1091.] Hargham Heath, v.-c. 28, July 31, 1925. New County Record.—H. J. Riddelsdell. B. & R.

Rubus incurvatus Bab. [Ref. No. 1092.] Lane, Sprowston, v.-c. 27, July 1925. Near type.—H. J. Riddelsdell.

Rubus incurvatus Bab., var. *subcarpinifolius* Rog. and Ridd. [Ref. No. 1087.] Boar's Hill, Berks, July 6, 1925, with G. C. Druce. New County Record for the var. Very luxuriant. This is the var. so named; and as Rogers' MS. record book (*Rubus*) says "Boar's Hill f. my var. *rotundifolius*." I am the more inclined to believe that the two varieties are not worth distinguishing. *L.C.*, ed. xi., has b. *rotundifolius* Rogers and Riddelsdell by a mistake. It has not been published, and as far as I at present know it is not worth publishing separately. Sepals rising; stamens not much longer than the styles. Also [Ref. No. 1088] Shotover Hill, v.-c. 23, July 7, 1925. Another New County Record for the var.—H. J. RIDDELSDELL. B. & R.

Rubus Lindleianus Lees. var. *latifolius* Rog. and Ridd. [Ref. No. 1099.] Ballintaggart, Co. Down, August 19, 1925. A very striking form which I saw only in one spot.—H. J. RIDDELSDELL. B. & R.

Rubus argenteus W. & N. Durdham Down, Bristol, W. Gloster, July and August 1921.—J. W. WHITE.

Rubus argenteus Whe. and Nees. [Ref. No. 1113.] Port skewett, v.-c. 35, July 1925. Also f. *glandulosa*, from Frensham Pond [Ref. No. 1111], Witley Common (Ref. No. 1112), Limpsfield Common [1108], Devil's Jumps [1110], all v.-c. 17, August 1925.—H. J. RIDDELSDELL. B. & R.

Rubus Bakeri F. A. Lees. [Ref. No. 1123.] Corner of a spinney near Wigginton Heath, Oxon, v.-c. 23, at about 600 feet elevation, June 6 and July 7, 1925. First discovery in v.-c. 23; known in E. Gloster at a locality only 12 miles from this: also in Warwick and Worcs. Lees' original description (*B.E.C.*, 1884/6, p. 120) differs somewhat from that drawn up by Rogers (*Handb.*, p. 30) from Surrey bushes, *e.g.*, fork "straight," inflorescence "narrow, racemose," petals "small, narrow obovate, white, slightly lilac tinged." Lees, moreover, says nothing about the long pedicels of terminal leaflet, which is a marked feature of the Surrey plant.—H. J. RIDDELSDELL. B. & R.

Rubus Schentzii Lindb. [Ref. No. 1114.] Near Stranraer, v.-c. 74, August 21, 1925. As seen here the species was notable for the prevailing apple-green hue of most of its parts, and for extreme leafiness, not only of the stem but also of the panicle.—H. J. RIDDELSDELL. B. & R.

Rubus dumnoniensis Bab. f. [Ref. Nos. 1142/3.] Behind Ling Ground, Taddington, v.-c. 33, August 12, 1925. First certain record for E. Gloster. Prickles curved though slender: leaflets narrow; glands rather many. Otherwise typical.—H. J. RIDDELSDELL. "Panicle and flowers certainly suggest this. But some prickles are short, and many declining or more or less curved. One stem-piece has all the prickles declining, a few curved. The top leaflet is also somewhat *Lindleianus*-like. Fruit is poorly developed, and three stem-pieces have each rather different prickles. There are some stalked glands on rachis. I hesitate to name it *dumnoniensis* pure and simple. Can there be another strain in it?''—BARTON.

Rubus mercicus Bagn., var. *bracteatus* Bagn. [Ref. Nos. 1138/9/40.] Boar's Hill, v.-c. 22, July 6, 1925; near Dunchurch, v.-c. 38, July and August 1925.—H. J. RIDDELSDELL. B. & R.

Rubus villicaulis Koehl. Stranraer, v.-c. 74, August 21, 1925. New record for Wigtownshire.—H. J. RIDDELSDELL.

Rubus Selmeri Lindeb. [Ref. Nos. 1128 and 1129.] Bould Wood, v.-c. 23, July 13, 1925; near Dunchurch, v.-c. 38, August 10, 1925.—H. J. RIDDELSDELL. B. & R.

Rubus villicaulis Koehl., var. *calvatus* Blox. [Ref. Nos. 1133 and 1135.] Bould Wood, v.-c. 23, in great quantity, July and August 1925. One of several New County Records for Oxon in this wood. Also Witley Common, Surrey, August 1925 [Ref. No. 1134] —H. J. RIDDELSDELL. B. & R.

Rubus gratus Focke. [Ref. Nos. 1124/5.] In some quantity at the end of Mousehold Heath, Norwich, v.-c. 27, July 1925.—H J. RIDDELSDELL. B. & R.

Rubus ramosus Briggs. [Ref. Nos. 1154, 1157/8.] Near Dunchurch, v.-c. 38, July and August 1925. A locality apparently different from Bagnall's (cf. Rogers' *Handbook*, p. 38).—H. J. RIDDELSDELL. B. & R.

Rubus thyrsoideus Wimm. [Ref. No. 1161.] Barby to Braunston, v.-c. 32, July 16, 1925; and Witley Common, Surrey, August 27, 1925 [Ref. Nos. 1163/4].—H. J. RIDDELSDELL. Lane from the Rugby-Daventry Road, going to Welton, August 27, 1925.—L. CUMMING.

Rubus pubescens Whe., var. *subinermis* Rog. [Ref Nos. 1171/2.] Limpsfield Common, v.-c. 17, August 28, 1925.—H. J. RIDDELSDELL. B. & R.

Rubus silvaticus Whe. and Nees. [Ref. Nos. 1176-1180.] Bould Wood, v.-c. 23, July and August 1925.—H. J. RIDDELSDELL. B. & R.

Rubus hesperius Rog. [Ref. No. 1181.] Shotover Hill, v.-c. 23, in several places, July 7, 1925. New County Record. Though not identical with the Irish type, this appears to be very near it.

being somewhat stouter in stem, and receding in leaf-toothing towards *myricae* Focke. The sepals and prickles, and the character of the hairs, as well as more obvious features, point to *hesperius*. I found the same species last year in v.-c. 2 as a New County Record (near Lostwithiel). Also from Ballintaggart, Co. Down, August 19, 1925 [Ref. No. 1181].—H. J. RIDDELSDELL. B. & R.

Rubus Schechtendahlii Whe. Swalcliffe Common [Ref. No. 1188]; Shotover [Ref. No. 1192], v.-c. 23, and wood at Brandon, v.-c. 38 [Ref. No. 1186]; also a magnificent plant by the road near Ashby St Ledgers, v.-c. 32 [Ref. No. 1187], all July 1925.—H. J. RIDDELSDELL.

Rubus amplificatus Lees. [*R. Schlechtendahlii* Whe., var. *amplificatus* (Lees).] [Ref. Nos. 1194/5/6.] Near Tintern, v.-c. 35, August 6, 1925; and near Norwich, v.-c. 27, July 28, 1925.—H. J. RIDDELSDELL. B. & R.

Rubus Colemanni Blox. Church Wood, Sprowston, v.-c. 27 (I also found it in Bucks, near Amersham in 1924), July 28, 1925. [Ref. Nos. 1197/8.] New County Record. A form with very roundish and short-pointed terminal leaflet. Also Mousehold Heath, v.-c. 27, July 29, 1925 [Ref. No. 1199], with a peculiar shaped terminal leaflet.—H. J. RIDDELSDELL. (*L.C.*, ed. xi., erroneously prints "*Colemanni* Bab."—H. J. R.)

Rubus Sprengelii Whe. Near Dunchurch and in a wood at Brandon, v.-c. 38, July 1925 [Ref. Nos. 1200 and 1201]; and Limpsfield Common, v.-c. 17, August 28, 1925 [Ref. No. 1202].—H. J. RIDDELSDELL. Brandon Wood, Rugby, July 20, 1925.—L. CUMMING.

Rubus hirtifolius Muell. and Wirtz. [Ref. No. 1210.] Micheldean Meend, v.-c. 34, July 1, 1925.—H. J. RIDDELSDELL.

Rubus iricus Rog., var. *minor* Rog. and Ridd. [Ref. Nos. 1205/6.] Tidenham Chase, v.-c. 34, August 6, 1925.—H. J. RIDDELSDELL. B. & R. Rocky hillside, Polperro, v.-c. 2 [Ref. No. 382], July 20, 1925.—F. RILSTONE. "Correctly named. First recorded from E. Cornwall by Miss Todd in 1922 (Roche Rocks and Pentewan). I saw it at Newbridge in 1924, and it was also found in that year by Rilstone at Polperro and Bocaddon. There is plenty of it in parts of W. Cornwall."—RIDDELSDELL.

Rubus pyramidalis Kalt. Church Wood, Sprowston, v.-c. 27, July 1925. [Ref. No. 1204.]—H. J. RIDDELSDELL. B. & R.

Rubus leucostachys Sm., var. *leucanthemus* (P. J. Muell.) ? [Ref. No. 1234.] Roads near Dunchurch, v.-c. 38, July 18, 1925. New County Record. Exactly like the Dorset plant so named by Rogers, and differing rather from the Surrey plant in shape of terminal leaflet. I place it still under the above name, though it is one of a number of forms, I believe, which will have to be named and described. It is almost certainly not the *leucanthemus* of Mueller.—H. J. Riddelsdell. B. & R.

Rubus lasiocladus Focke, var. *angustifolius* Rog. Tidenham Chase, v.-c. 34 [Ref. No. 1215)] and Penterry, v.-c. 35 [Ref. No. 1214], August 5, 1925.—H. J. Riddelsdell. B. & R.

Rubus criniger Linton. Mousehold Heath, and many other places about Norwich, v.-c. 27; and Merton, in a wood, v.-c. 28, July 1925.—H. J. Riddelsdell. B & R.

Rubus Lettii Rog. Newtownbreda, Saintfield, and Ballintaggart, Co. Down [Ref. Nos. 1223 to 1229]; also Selshan, Co. Antrim [New County Record—Ref. No. 1230], August 1925.—H. J. Riddelsdell. B. & R.

Rubus Boraeanus Genev. Lea Bailey Woods, W. Gloster, v.-c. 34, July 1, 1925 [Ref. No. 1203], and near Norwich, v.-c. 27, July 27, 1925 [Ref. No. 1222].—H. J. Riddelsdell. B. & R.

Rubus apiculatus Whe. and Nees. [Ref. Nos. 1235-8.] XII. O'clock Drive, Brandon, v.-c. 38, July and August. In some quantity. No. 1236 was a strong bush with larger flowers. The same species as *R. anglosaxonicus* Gel., apparently.—H. J. Riddelsdell. B. & R.

Rubus apiculatus Whe. and Nees, var. *raduloides* Rog. Taddington, v.-c. 33, August 12, 1925 [Ref. No. 1239], and Stranraer, v.-c. 74, August 21, 1925 [Ref. No. 1240].—H. J. Riddelsdell. B. & R.

Rubus apiculatus Whe. and Ness, var. *setulosus* Rog. Near Symonds' Yat, in plenty, v.-c. 34, August 7, 1925. [Ref. No. 1241 2/3, 1251]; Lea Bailey Woods, v.-c. 34, July 1, 1925 [Ref. No. 1250]; St Arvan's, Trelleck, and Chepstow Park, v. c. 35, July and August 1925 [Ref. Nos. 1244 to 1249].—H. J. Riddelsdell. B. & R.

Rubus Borreri Bell Salt. Chepstow Park, v.-c. 35, July 1, 1925 [Ref. Nos. 1292/3); Tidenham Chase, v.-c. 34, August 6, 1925 [Ref. No. 1294].—H. J. Riddelsdell.

Rubus Drejeri G. Jens., var. *Leyanus* Rog. [Ref. Nos. 1252-1267.] Bould Wood, v.-c. 23, July and August 1925. New County Record. Known from Bucks, W. Gloster, Warwick, most West and South-West counties and a few East (Surrey, N. Essex, S.-E. Yorks). In great quantity in Bould Wood and adjoining woods: often quite typical, but in leaf shape and toothing apt to vary greatly, though not more than in many S. Wales bushes from which I have gatherings.—H. J. RIDDELSDELL. B. & R.

Rubus Drejeri G. Jens., var. *hibernicus* Rog., and *dunensis* Rog. At Saintfield and Aghaderg, Co. Down; also Selsham and Portmore, Co. Antrim (both New County Records for Antrim), August 1925. The name *dunensis* has nothing to do with sea-sands; it refers to Co. Down. The two forms are very common where they occur: but I do not find them always easy to distinguish in a dried state, though in the field they separate at a glance.—H. J. RIDDELSDELL.

Rubus Radula Whe. [Ref. No. 1295.] Ling Ground, Taddington, v.-c. 33, August 8, 1925.—H. J. RIDDELSDELL. B. & R. In cross-road from Rugby to Dunchurch, and the road from Rugby to Barby, July 13, 1925.—L. CUMMING.

Rubus Radula Whe., var. *anglicanus* Rog. [Ref. No. 1296.] Roadside, Bledington to Stow, v.-c. 33, August 12, 1925. New County Record.—H. J. RIDDELSDELL. B. & R.

Rubus echinatus Lindl. Brandon, near Rugby, July 16, 1925. —L. CUMMING.

Rubus regillus Ley. [Ref. No. 1297.] Saintfield, Co. Down, August 18, 1925. New County Record. Leaf-toothing coarse, leaf outline somewhat different from type; otherwise excellent material. I found a form of the same species near Looe, v.-c. 2 (New County Record), in 1924.—H. J. RIDDELSDELL.

Rubus ericetorum Lefv., var. *cuneatus* Rog. et Ley. [Ref. No. 1298.] Ling Ground, Taddington, v.-c. 33, August 12, 1925. Nearly the S. Wales type.—H. J. RIDDELSDELL. B. & R.

Rubus curatifolius P. J. Muell. [Ref. Nos. 1299, 1300.] Chepstow Park, v.-c. 35, July and August 1925.—H. J. RIDDELSDELL. B. & R.

Rubus fuscus Whe. and Nees. [Ref. No. 1301.] Edge of Bould Wood, v.-c. 23, July 13, 1925.—H. J. RIDDELSDELL. B. & R.

Rubus fuscus Whe. and Nees, var. *nutans* Rog. [Ref. No. 1302. Woods near Symond's Yat, v.-c. 34, August 7, 1925. New County Record. At one spot in some plenty.—H. J. RIDDELSDELL. B. & R

Rubus pallidus Whe. and Nees, var. *leptopetalus* Rog. [Ref. No. 1303.] Lea Bailey Woods, v.-c. 34, July 1, 1925.—H. J. RIDDELSDELL. B. & R.

Rubus scaber Whe. and Nees. [Ref. No. 1304.] Boar's Hill, v.-c. 22, July 6, 1925. The locality from which the sheets in the Set of British Rubi were taken. Named by Focke.—H. J. RIDDELSDELL. B. & R. Lane by Methodist Chapel, Ardleigh, N. Essex, v.-c. 19, July 2, 1925 [Ref. No. 2269]. Gathered as a form of *R. fuscus*, but Riddelsdell, who has seen the whole of my gathering, says, *in lit.*, " it is very much like the Boar's Hill *R. scaber*, and would go, on the whole, better under that species than under *fuscus*."—G. C. BROWN.

Rubus thyrsiger Bab. [Ref. No. 1310.] Lea Bailey Woods, v.-c. 34, July 1, 1925. New County Record. Form with very short stamens. A species with a very wide, though gappy, distribution, predominantly south-western, but extending northwards to Loch Ness and the Island of Eigg, and eastwards to Bucks, Middlesex, E. Sussex, and W. Kent.—H. J. RIDDELSDELL. B. & R.

Rubus Lintoni Focke. [Ref. Nos. 1311-1313.] Woods, lanes, and in thicket on a heath, near Norwich, v.-c. 27, July 1925. No. 1311 (from Mousehold Heath) is more irregular in panicle development, far more thickly armed, with prickles sometimes curved, and frequent quinate leaves.—H. J. RIDDELSDELL.

Rubus foliosus Whe. and Nees. Saintfield, Co. Down, August 18, 1925 [Ref. No. 1322]—confirmation for Co. Down: Bould Wood, Shotover, and Churchillheath Wood, v.-c. 23, July and August 1925 [Ref. Nos. 1318, 1319, and 1323]; Mousehold Heath, v.-c. 27, July 29, 1925 [Ref. No. 1321], New County Record; Limpsfield Common, v.-c. 17, August 28, 1925 [Ref. No. 1314]; Chepstow Park and Trelleck to Tintern, v.-c. 35 [Ref. Nos. 1315, 1316, 1317, and 1324].—H. J. RIDDELSDELL. B. & R.

Rubus rosaceus Whe. and Nees. [Ref. No. 1307.] St Arvans, v.-c. 35, July 2, 1925.—H. J. RIDDELSDELL. B. & R.

Rubus hystrix Weihe. Brandon, near Rugby, August 15, 1925. —L. CUMMING.

Rubus hystrix Whe. and Nees, var. *infecundus* Rog. [Ref. No. 1327.] Church Wood, Sprowston, v.-c. 27, July 28, 1925. New County Record.—H. J. RIDDELSDELL.

Rubus hystrix Whe. and Nees, var. *bercheriensis* Druce. [Ref. Nos. 1325-6.] Boar's Hill, v.-c. 22, July 6, 1925. Rogers did not think this worth a distinctive name.—H. J. RIDDELSDELL. B. & R.

Rubus rosaceus Whe. and Nees, var. *Purchasianus* Rog. [Ref. No. 1309.] Woods below Symonds' Yat, v.-c. 34, August 7, 1925. —H. J. RIDDELSDELL. B. & R.

Rubus hystrix Whe. and Nees, var. *adornatus* (P. J. Muell.). [Ref. Nos. 1328-1332.] Bould Wood, v.-c. 23, July and August 1925. New County Record. A strongly armed form, generally with rather poor panicle. Also wood, XII. O'clock Drive, Brandon, v.-c. 38, July 17, 1925 [Ref. No. 1333-4].—H. J. RIDDELSDELL. B. & R.

Rubus Powellii Rogers. Shotover, Oxon, 1925.—G. C. DRUCE. "This is the plant which Rogers found in 1895 on Shotover, and referred to *Powellii* as a form. Ley in 1908 found there a plant nearer the Essex type, though larger."—RIDDELSDELL.

Rubus hystrix Whe. and Nees, var. *Powellii* (Rogers). [Ref. No. 1335.] Shotover Hill, v.-c. 23, July 7, 1925, with G. C. DRUCE. This is the plant found here by Rogers in 1895, and referred by him to *Powellii* as a form. It is just like a plant sent me recently from Cornwall. In 1908 Ley found on Shotover a form much nearer the Essex *Powellii* than the present plant is. The latter may be left as *Powellii* f., going off towards *radula*. The stem, in fact, is very near *radula*, the panicles very near *Powellii*.—H. J. RIDDELSDELL.

Rubus dasyphyllus Rog. St Arvans and Chepstow Park, v.-c. 35, July 2, 1925 [Ref. Nos. 1337 and 1339]; Taddington, v.-c. 33, August 8, 1925 [Ref. No. 1340]; and wood, Ashby St Ledgers, v.-c. 32, July 16, 1925 [Ref. No. 1341], a coarse toothed form with thin leaves (shade-grown).—H. J. RIDDELSDELL. B. & R.

Rubus Marshalli Focke and Rogers. Boar's Hill, Berks, July 6, 1925. Ref. Nos. 1347 and 1343, forms going off towards var. *semiglaber*; Ref. No. 1346 typical. Also Witley Common, v.-c. 17, 1925 [Ref. No. 1345], a form with untypical panicle; and by Frensham Pond, v.-c. 17, August 27, 1925 [Ref. No. 1342], typical.—H. J. RIDDELSDELL. B. & R.

Rubus. Blackdown, W. Sussex, July 21, 1925.—R. J. BURDON. "Very poor material, but clearly *R. Marshalli* Focke & Rogers."—RIDDELSDELL.

Rubus Marshalli Focke and Rogers. Boar's Hill, Berks, 1925. —G. C. Druce.

Rubus viridis Kalt. [Ref. No. 1348.] By Frensham Pond, v.-c. 17, August 1925.—H. J. Riddelsdell.

Rubus divexiramus P. J. Muell. [Ref. No. 1349.] Wyaston Leys, near Monmouth, v.-c. 35, and woods near Symonds' Yat, v.-c. 34 [Ref. No. 1350].—H. J. Riddelsdell.

Rubus serpens Whe. Wood between Trelleck and Tintern, v.-c. 35, August 6, 1925 [Ref. No. 1357]; and Chepstow Park, v.-c. 35, July 2, 1925 [Ref. No. 1352].—H. J. Riddelsdell. B. & R.

Rubus tereticaulis P. J. Muell. [Ref. Nos. 1354-6.] Wood at Sprowston, and Mousehold Heath, v.-c. 27, July 1925. E. F. Linton's old localities.—H. J. Riddelsdell. B. & R.

Rubus dumetorum Whe. and Nees. Charterhouse Warren, Mendip, N. Somerset, v.-c. 6, July 28, 1925. The row of bushes was noticeable because the sepals on most of the panicles had become foliaceous.—Miss Ida M. Roper. "Peculiar; somewhat fasciculate in pan. Very possibly a recently formed hybrid; I should say nearer *Drejeri* G. Jensen than *dumetorum* W. & N. But it is not anything that I can name confidently, at any rate from one sheet." —Riddelsdell.

Rubus dumetorum, var. *concinnum*. Brandon, near Rugby, September 11, 1925.—L. Cumming.

Rubus dumetorum Whe. and Nees, var. *fasciculatus* (P. J. Muell.). [Ref. No. 1357.] Mousehold Heath, v.-c. 27, July 1925. —H. J. Riddelsdell. B. & R.

Rubus Balfourianus Blox. Wood at Brandon, and roadside near Dunchurch—a common bramble in v.-c. 38, August 1925. [Ref. Nos. 1363, 1364.]—H. J. Riddelsdell. B. & R. Cross-road between Rugby and Barby, and the Rugby and Dunchurch roads, September 11, 1925. Also Brandon, near Rugby, September 10, 1925.—L. Cumming. "Near *Balfourianus*, and possibly a form of it."—Riddelsdell.

Rubus laciniatus Willd. [Ref. Nos. 1126/7.] Tadmarston Heath, v.-c. 23, July 9 and August 10, 1925. L. H. Bailey (*Gentes Herbarium*, p. 196) says "probably of mutation origin in Europe from *R. vulgaris* Weihe and Nees." To my mind it is much nearer to *R. Selmeri* than to *R. vulgaris*, the latter being very close to *R.*

Lindleyanus Lees. On Tadmarston Heath it propagates both vegetatively and by seed, and shows a vigorous life unsurpassed by most Rubi.—H. J. RIDDELSDELL.

Rubus adscitus Genev. [Ref. Nos. 1208/9.] Wyaston Leys, Monmouth, and Chepstow Park, v.-c. 35.—H. J. RIDDELSDELL. B. & R. Roadside near Perranzabuloe Church, v.-c. 1, August 10, 1925 [Ref. No. 389].—F. RILSTONE. "Correct; a common Cornish bramble."—RIDDELSDELL.

Rubus adscitus Genev., f. ?. [Ref. Nos. 1211/2.] Selsham, Co. Antrim, August 20, 1925. The extraordinary thick felted foliage makes this form very odd-looking; but in other respects the plant agrees very well with a Co. Down form which Rogers referred here. —H. J. RIDDELSDELL.

Rubus glareosus Rog. and Marsh. Witley Common and near Churt, v.-c. 17, August 1925 [Ref. No. 1305].—H. J. RIDDELSDELL. B. & R.

Alchemilla vulgaris L., var. *pratensis* Pohl. [Ref. No. 627.] Jervaulx, N. Riding, June 3, 1925. Var *minor* was abundant, and var. *alpestris* rather scarce, in the same district.—J. E. LITTLE. "Yes; correct as far as my descriptions go, and a sheet from Kincardineshire. The stems and petioles are more or less densely covered with spreading hairs, though less densely so than in my specimens. The pedicels and arceols are glabrous. According to the *L.C.*, ed. xi., the name should now be written *A. pratensis* Schmidt."—FRASER. "Yes, I should name it *A. pratensis* Schmidt."—SALMON.

Rosa canina L., var. *senticosa* Baker, f. *Amansii* W.-Dod (*fide* Wolley-Dod). [Ref. No. 2840.] Leatherhead Downs, Surrey, v.-c. 17, September 12, 1925.—C. E. BRITTON.

Rosa canina, var. *Pouzini*, f. *anglica* Wolley-Dod. Fawke Common, W. Kent, v.-c. 16, July 18, 1925. [Ref. No. 2059.] These specimens come from the same station as my original gathering, but are not from the original bush, which has disappeared. But they agree very closely with my type No. 29, the description of which is, I fear, defective in saying that the pubescence "rarely" reaches the midribs. It almost always does so, and the fruit is quite ovoid, not at all subglobose. It was not formed in my type. Varieties of *R. Pouzini* Tratt. exist on the Continent with more or less pubescent leaflets, which connects this species with my group Aciculatae of *R. dumetorum*.—A. H. WOLLEY-DOD. Since the above was written Dr Keller has confirmed the opinion that this is

R. Pouzini Tratt., with slightly pubescent petioles and midribs.—A. H. W.-D.

Rosa canina L., var. *dumalis* Dum. [Ref. No. 2836.] Albury Downs, Surrey, September 5, 1925 (*fide* Wolley-Dod).—C. E. BRITTON.

Rosa canina L., var. *verticillacantha* Baker. [Ref. No. 2851.] Epsom Downs, Surrey, September 27, 1925.—C. E. BRITTON. "Yes, this must be a form of *verticillacantha*, but small in all its parts, and remarkably strongly biserrate."—WOLLEY-DOD.

Rosa dumetorum Thuill., var. *platyphylla* Wolley-Dod. [Ref. No. 2826.] Horsley, Surrey, August 29, 1925.—C. E. BRITTON. "I think this is var. *platyphylla* rather than *urbica*. The specimens vary in the size and breadth of leaflets, and in the shape of fruit, some of which are round enough for f. *sphaerocarpa*, but the majority of the styles are too hispid for the latter."—WOLLEY-DOD.

Rosa agrestis Savi, var. *belnensis* (Ozan). Above Clapton Wick, N. Somerset, v.-c. 6, July 14 and September 15, 1925. Flowers white.—Miss IDA M. ROPER. "Correctly named, but Rouy is the authority for the combination. Just similar Roses were gathered by Marshall near Uphill (v.-c. 6), which were referred by Sudre to *R. arvatica*, and by Dingler to near *R. inodora* Fr. The glabrous styles (which are remarkably exserted in Miss Roper's specimens) quite remove it from *R. inodora*, but forms of *R. arvatica* may sometimes have almost as globose fruit. Var. *belnensis* comes very near *arvatica*."—WOLLEY-DOD.

Rosa tomentosa Sm., var. *Brittoni* Wolley-Dod. [Ref. No. 2827.] Horsley, Surrey, August 29, 1925.—C. E. BRITTON. "Yes, quite good *Brittoni*."—WOLLEY-DOD.

Rosa tomentosa, var. *foetida* Ser. Huggett's Furnace, near Hadlow Down, September 10, 1925 [Ref. No. 2060], also near Hartfield, August 22, 1925 [Ref. No. 2061], both E. Sussex, v.-c. 14. I send a few sheets from two different stations of practically identical forms of *R. tomentosa*, var. *foetida*, differing from the type of var. *foetida* in having somewhat less broad leaflets, often with suprafoliar glands, and with very slightly hispid instead of quite glabrous styles. The suprafoliar glands were very conspicuous when the plants were in flower, and are still plentiful on some leaflets of the Hartfield plant, but they have mostly fallen in the specimens from Huggett's Furnace, gathered nearly three weeks later, showing that these organs are deciduous. This strengthens my belief that glands as well as hairs are often deciduous, so that their value as a means of segregating varieties is discounted.—A. H. WOLLEY-DOD.

Rosa omissa × *spinosissima*. [Ref. No. 2791.] Bryn-y-Maen, Denbigh, July 9, 1925. Plentiful in a hedge. *R. omissa* Desegl., var. *typica* R. Kell., forma *resinoides* Wolley-Dod was abundant in the neighbourhood, and was the only member of the Villosae seen in the district. *R. spinosissima* grew not far away.—C. E. BRITTON. "An *omissa* × *spinosissima* hybrid without doubt, and I always give the finder the credit of being the best person to decide which the Villosa parent is. It is interesting, but not surprising, to see how entirely the very numerous sub-foliar glands of the *resinoides* parent have been suppressed, and shows how difficult it is to guess a parentage from the presence or absence of such organs. Your hybrid, no doubt *R. spinosissima* × *omissa* Desegl., var. *typica* R. Kell., f. *resinoides* Wolley-Dod, is what I should have put under ×*R. Sabini*, or what our older rhodologists would have called *R. Doniana* Woods."—WOLLEY-DOD.

Rosa rugosa Thunb. Cover Wood, Gomshall, Surrey; near Hove, W. Sussex, 1923.—Miss COTTES; comm. G. C. DRUCE. "Yes, but of course naturalised, being a native of Eastern Asia. Both localities are given on the label of the sheet sent to me. This mixture would be very dangerous with most British Roses, but with so marked a species as this there is no room for doubt."—WOLLEY-DOD. "Near Hove may be omitted. There is only one gathering from one place, the exact locality being omitted at first."—DRUCE.

Pyrus Aria Ehrh. Beaconsfield, Bucks, June 1925.—G. C. DRUCE.

Cotoneaster microphylla Wallich. Old wall on Malvern Hills, Worcs, v.-c. 37, June 12, 1925. No doubt originally planted.—C. WATERFALL.

Cotoneaster Simonsii Baker. Hog's Back, Surrey, July 2, 1925. —R. J. BURDON. "Yes."—DRUCE.

Saxifraga caespitosa L. Kongsvold, Norway, August 1925. Here it grew on a roadside wall, and thus more easy to obtain than in Glen Spean, the plant of which seems to come well under this species.—G. C. DRUCE.

Peplis Portula L. In abundance on dried margins of pond, Donyland Heath, N. Essex, v.-c. 19, August 16, 1925. In my experience a decidedly scarce plant in Essex. Here it covers a large area, and obviously comes under the typical plant.—G. C. Brown. " This has the short calyx teeth of the type."—Druce.

Epilobium obscurum Schreb. Waste ground, Gt. Malvern, Worcs, v.-c. 37, July 6, 1925.—C. Waterfall.

Epilobium lanceolatum Seb. et Maur. Quarry in Pennant Rock, Cloud Hill, Temple Cloud, Somerset, v.-c. 6, July 1925.—H. Downes.

Epilobium montanum L. Grounds of Ruthin Castle, July 15, 1925.—L. Cumming. " The petals are very short for *montanum*." —Druce.

Epilobium alsinefolium Vill. Springs on the north-east side of Dent Crag, N.-E. Yorks, v.-c. 65, alt. 2000 feet, August 6, 1920.— A. Wilson.

Epilobium collinum Gmel. Loen, Norway, August 1925.—G. C. Druce.

Oenothera biennis L. Waste ground adjoining Boughton Hall Cricket Ground, Chester, v.-c. 56, July 19, 1925.—C. Waterfall.

Oenothera odorata Jacq. Sandy ground, St Helen's Spit, I.W., v.-c. 10, July 5, 1925.—R. Melville.

Oenanthe silaifolia Bieb. Damp ground, Ripple, Worcs, v.-c. 37, June 15, 1925.—C. Waterfall.

Galium Mollugo L., (?) var. *Bakeri* (Syme). [Ref. No. 641.] Priory Park, Hitchin, Herts, v.-c. 20, June 17, 1925. Plants from this station were seen and agreed to by Mr E. G. Baker in 1924.— J. E. Little.

Asperula odorata L. Crevices of limestone rocks, Bwlch Gwyn, Wrexham, Denbigh, v.-c. 50, June 1, 1925.—C. Waterfall.

Sherardia arvensis L., var. *maritima* Griseb. Headington, Oxon, May 1893.—G. C. Druce.

Valerianella dentata Poll., var. *mixta* Dufr. Headington, Oxon, 1893.—G. C. Druce.

Erigeron acris L. Old walls, Somerton, Somerset, v.-c. 5, August 1925.—H. Downes.

Erigeron. Waste ground, Splott, Cardiff, v.-c. 41, August 22, 1925. This is a grain alien. All the specimens are side shoots from two large plants that had been broken down by the wind. Flowers yellow, non-radiating. Native of Australia (?).—R. L. SMITH. "Is the N. American *Aster ascendens* Lindl.," teste THELLUNG.

Gnaphalium norvegicum Gunn. Near Ore, Sweden, August 1925.—G. C. DRUCE.

Ambrosia artemisiaefolia L. Waste land near Poole Harbour, Dorset, September 21, 1925.—L. B. HALL.

Achillea macrophylla L. Hedgebank near Colwall, Herefordshire, v.-c. 36, June 22, 1925. Probably a garden escape.—C. WATERFALL. "Yes."—THELLUNG.

Anthemis tinctoria L., var. *discoidea* (Willd.). Cadoxton, v.-c. 41, August 8, 1924. A number of plants growing with the type on a railway bank facing south-west. Associated with these were *Potentilla argentea* L., *Coronilla varia* L., *Salvia sylvestris* L., and *Allium vineale* L. Probably introduced with ship's ballast.—R. L. SMITH. "Yes."—THELLUNG.

Anthemis nobilis L. Among rushes in damp meadow, Penhallow, v.-c. 1, August 1925.—F. RILSTONE.

Chrysanthemum Parthenium Lam., var. *flosculosum* DC. Hedgebank, West Bergholt Heath, N. Essex, v.-c. 19, September 14, 1925. First gathered with Mrs Wedgwood in 1922, and named by Dr Druce. The plants have increased considerably in number, and these specimens have rather gone over, but are characteristic.—G. C. BROWN.

Petasites ovatus Hill. Banks of R. Yore, Jervaulx, Wensleydale, N. Riding, June 3, 1925. In the Hitchin district, although there are a good many stations for the plant, I have never seen any fruit produced, and the plants are presumably all sub-male. On the banks of the Yore it was fruiting abundantly, and I also saw some at Bedale. It would, I think, be interesting to have collected records of fruiting plants.—J. E. LITTLE. "*P. hybrida* G.M.S. is the valid name according to Mr Sprague."—DRUCE.

Doronicum Pardalianches L. Ruthin Castle grounds, July 15, 1925.—L. CUMMING.

Senecio mikanioides Otto. Adventive. Hedge at St Catherine's Bay; also at Rozel Bay, Jersey, November 10, 1925. Seeding freely, and spreading in the island. This South African plant was recorded in 1915 near Torquay (*Rep. B.E.C.*, vol. iii., p. 475), where it had been known for 15 years, but was never seen to flower. In the North of France and in Belgium it is much cultivated as an ornamental climber, but does not flower, owing very likely to the early frosts. In Jersey it is well established in several places, and seems to be spreading. It grows luxuriantly, and climbs over shrubs and small trees in the same way as *Clematis Vitalba*. The mildness of the climate causes it to flower regularly and seed freely. The flowers, which are fragrant and inconspicuous, do not appear before November or the last week of October. The plant is very fleshy, and is very hard to dry. This explains why the specimens distributed have a rather poor appearance.—L. ARSENE. "Also noted in Scilly Isles. Popularly known as German Ivy."—DOWNES. "Yes; it is also naturalised in the Azores and Madeira."—DRUCE.

Cirsium oleraceum Scop. Ex Selkirk, Hort. Oxon, September 1925.—G. C. DRUCE.

Centaurea. Blackdown, W. Sussex, July 21, 1925.—R. J. BURDON. "*Centaurea nemoralis* Jord., var. *subintegra* of the writer's paper in *Rep. B.E.C.* 1921, p. 413."—BRITTON.

Centaurea Jacea L., sub-sp. *C. jungens* Gugl., var. *fimbriatisquama* Gugl. Woldingham, Surrey. From the locality mentioned in the article on *Centaurea Jacea* in *Rep. B.E.C.* 1920. Various dates.—C. E. BRITTON.

Centaurea Drucei C. E. Britton. Various localities in Surrey and Sussex, and all specimens fairly characteristic of this form. Various dates.—C. E. BRITTON.

Centaurea nigra L., forma *radiata* Coss. & Germ. Malvern, Worcs, v.-c. 37, June 1925.—C. WATERFALL. "*Centaurea nemoralis* Jord., var. *subintegra* C.E.B., forma *radiata.*"—BRITTON.

Centaurea nigra L., var. Sturdy's Castle, Oxon, August 1925.—G. C. DRUCE. "*Centaurea nemoralis* Jord., var. *subintegra* C.E.B., forma *radiata.*"—BRITTON.

Centaurea Calcitrapa L. Waste ground, Bradford, v.-c. 64, September 16, 1925.—J. CRYER.

Crepis capillaris Wallr., var., with long simple and gland-tipped hairs mixed on the phyllaries. Bloxham, v.-c. 23, among mowing grass, June 18, 1925.—H. J. RIDDELSDELL. "Too young for critical naming."—THELLUNG.

Crepis foetida L. Newhaven, E. Sussex, June 1925.—G. C. DRUCE.

Hieracium eximium Backh. Fiagh, Forfar, July 1911. Zahn, I think and wrongly, queries its being *H. calenduliflorum* × *alpinum*; considering his over elaboration of the genus and his raising so many plants to the rank of sub-species, one cannot agree to his merging *holosericeum* into *alpinum*, or of his making *tenellum* a variety of it.—G. C. DRUCE. " Correctly named."—CRYER.

Hieracium scoticum F. J. Hanbury (*Journ. Bot.*, vol. xxvi.. [Ref. No. 3107.] Grassy, heathery, rocky crags at burnside, 210 feet, Burn of Sowa Dee, Sandwick, Orkney, July 23, 1925.—H. H. JOHNSTON. " Correctly named."—CRYER.

Hieracium. Parkhurst, Lurgashall, W. Sussex, August 15, 1925.—R. J. BURDON. " Mine is a poor specimen, but is without doubt *H. sciaphilum* Uechtr."—CRYER. " The name is superseded by *H. Lachenalii* Gmel."—DRUCE.

Hieracium cacuminatum Dahlst. (?). On Millstone Grit, Shipley, v.-c. 64, June 23, 1925. I am not sure that this is correctly named, but it matches very closely one so named for me by the late Rev. A. Ley, gathered lower down in the valley of the River Aire — J. CRYER. "*Cacuminatum* is not given for Britain by Zahn, although admitted to the *L.C.*"—DRUCE.

Hieracium umbellatum L., var. *linariifolium* Wallr. Sandy seashore, Mudeford, v.-c. 11, August 28, 1925.—J. CRYER. " Not included for Britain by Zahn, but given for 14 v.-c. in *L.C.* Dahlstedt so names my Southport specimens."—DRUCE.

Hypochaeris maculata L. Cliffs on the coast near Grosnez Castle, Jersey, July 3, 1925.—L. ARSENE.

Tragopogon porrifolius L. Fletton Brickyards, Hunts, June 1925.—G. C. DRUCE.

Campanula patula L. Near Bucklebury, Berks, October 1925. Native. New County Record. Major Bates van de Weyer was its finder, and by his directions I was able to see it growing along a wood border and in an old gravel pit.—G. C. DRUCE.

Erica ciliaris L. Chacewater, v.-c. 1 (undated).—J. H. A. STEUART; comm. NAT. MUS. OF WALES.

Erica ciliaris L. × *Tetralix* (*Watsoni* Benth.). Near Wareham, Dorset, August 31, 1925.—L. B. HALL.

Ledum palustre L. Near Ange, Sweden, September 1925.—G. C. Druce.

Moneses uniflora A. Gray. Rattfik, Dalen, Sweden, September 1925.—G. C. Druce.

Limonium binervosum Salm. Sea rocks, Elizabeth Castle, and Plemont, Jersey, July 22, 1925.—L. Arsene. "Yes."—Salmon.

Primula elatior Schreb. × *vulgaris* Huds. Hatfield Forest, Hatfield Broad Oak, N. Essex, v.-c. 19, April 13, 1925. In great abundance, with a few plants of typical *elatior* and large quantities of *vulgaris*. Examples on some of the sheets show long-stalked flowers arising from sessile umbels as in *P. vulgaris*. From its most southerly station in Britain.—G. C. Brown.

Lysimachia nemorum L. Thicket, Malvern Wells, Worcs, v.-c. 37, June 4, 1925.—C. Waterfall.

Centunculus minimus L. Damp ground near Carnkief Pond, Perranzabuloe, v.-c. 1, August 1925.—F. Rilstone.

Symphytum peregrinum Ledeb. (?). Grounds of Ruthin Castle, June 25, 1925.—L. Cumming.

Myosotis palustris Hill, var. *strigulosa* Reichb. Wotton, Surrey, v.-c. 17, July 25, 1925.—C. E. Britton.

Myosotis repens Don. Blackdown, W. Sussex, July 4, 1925.—R. J. Burdon.

Lithospermum arvense L. Cultivated ground, Somerton, Somerset, v.-c. 6, August 1, 1925.—H. Downes.

Solanum Dulcamara L., var. *villosissimum* Desv. [Ref. No. 2752.] Banstead Downs, Surrey, June 7, 1925. This very pubescent form appears less striking in this dried condition than when living, pressure, no doubt, being responsible. A later name than the one here adopted is var. *tomentosum* Koch, and it is also the *S. littorale* of Raab., but Rouy was surely in error in associating with these names Babington's variety *marinum*, which is not a conspicuously hairy form, but distinguished rather by its more fleshy leaves, less lobed than usual, and by its habitat, on shingly beaches.—C. E. Britton.

Solanum Dulcamara L., var. *tomentosum* Koch. Marston, Oxon, September 1925. By a slip, the label was written in some cases *nigrum*.—G. C. Druce.

Physalis minima L. Waste ground, Bradford, v.-c. 64. July 17, 1925.—J. CRYER.

Atropa Belladonna L. Hedgerows, White Down, Surrey, August 25, 1925.—W. BIDDISCOMBE.

Hyoscyamus albus L. Waste ground, Barry, v.-c. 41, August 8, 1925. This plant regularly puts in an appearance in the above locality, and occasionally ripens good fruit.—R. L. SMITH. "Yes."—DRUCE.

Verbascum phlomoides L. Quarry ground, Tytherington, W. Gloster, v.-c. 34, October 10, 1925. This handsome alien of central Europe was known in England as far back as 1836, when Babington found a few plants in a field near Worthing.—Miss IDA M. ROPER. "Yes."—DRUCE.

Linaria spuria Mill. Alconbury, Hunts, July 1911.—G. C. DRUCE.

Veronica hybrida L. Near Llandudno, Denbigh, v.-c. 50, alt. 400 feet, August 22, 1925.—A. WILSON.

Euphrasia nemorosa Pers. Princes Risborough, Bucks, August 1919.—G. C. DRUCE.

Euphrasia gracilis Fr. Malham Moor, at 1250 feet, v.-c. 64, August 11, 1925.—W. A. SLEDGE. "Yes."—LUMB. "The older name is *E. micrantha* Reichb."—DRUCE.

Euphrasia Rostkoviana Hayne. Bog near Malham Tarn, v.-c. 64, August 11, 1925.—W. A. SLEDGE. "Yes."—LUMB.

Euphrasia sp. [Ref. No. 3103.] Shell-sandy pasture at 20 feet, seashore, Links of Boardhouse, Birsay, Orkney, July 23, 1925. Leaves 2-8 toothed; corolla medium sized, rich dark purple, with darker purple lines on both lips, and a yellow spot on middle of lobe of lower lip.—H. H. JOHNSTON. "*E. atroviolacea*—glandular hairs extremely sparse."—PEARSALL. "Yes, *atroviolacea* Druce & Lumb, with fewer glandular hairs and larger upper bracts than in plants previously gathered. We hope that Col. Johnston will send another gathering next year."—LUMB. "Yes."—DRUCE.

Euphrasia sp. [Ref. No. 3104.] Shell-sandy pasture at 20 feet, seashore, Links of Boardhouse, Birsay, Orkney, July 23, 1925. Leaves 2-8 toothed; corolla medium sized, with a pale purple upper lip and white lower lip, with dark purple lines on both lips, and a yellow spot on middle of middle lobe of lower lip.—H. H. JOHNSTON.

"As in 3103, the short glandular hairs are very few in number, but certainly present on some of the calyx teeth. These [3104] specimens have much longer setae on the leaf-margins than is the case with 3103. Both numbers belong to the same species, and are very acceptable."—Pearsall. "*Atroviolacea* Druce & Lumb, with fewer glandular hairs, larger upper bracts, and very much paler flowers than in plants previously gathered. Will Col. Johnston send another gathering next year?"—Lumb. "Yes, a paler flowered form from *locus classicus*."—Druce.

Bartsia Odontites Huds. Sturdy's Castle, Oxon, September 1925.—G. C. Druce.

Rhinanthus monticola (Stern.) Druce. Malham Moor, v.-c. 64, at 1250 feet, with *Bartsia alpina* and *Euphrasia gracilis*, August 11, 1925.—W. A. Sledge. "Yes."—Druce.

Melampyrum cristatum L. Monks Wood, Hunts, July 1925.—G. C. Druce.

Melampyrum pratense L. Welwyn, Herts, v.-c. 20, June 13, 1925. I send this for determination of its sub-sp., etc.—J. E. Little and W. R. Sherrin.

Mentha alopecuroides Hull. Near Biddesdon, N. Hants, v.-c. 12, September 1925.—G. C. Druce. "Correctly named. The hybrid does not seem to vary except in size, according to soil and moisture."—Fraser. "Yes."—Salmon.

Mentha longifolia Huds. (*M. sylvestris* L.). Marsh at Walton-in- Gordano, N. Somerset, August 1925. The plant at this locality is of some little interest, as when first recorded at the spot it grew in company with *Cyperus longus*. Both it and the sedge disappeared when the place, used as a pig pound by the occupying cottar, became an impassable slough of black mud. The Mint survived, to reappear more than 30 years later; but the *Cyperus*, unhappily, was altogether lost to the county.—J. W. White. "Yes; an interesting form of *M. longifolia* Huds., with an interesting history. It is similar to a sheet in the Herbarium of Linnaeus, but the leaves are rather shorter and broader, though this may have been due to the arrest of the main axis on my specimen, and the production of lateral branches. Two pairs of leaves below the branches are normal."—Fraser. "Yes, a very neat form."—Salmon.

Mentha longifolia Huds., var. *mollissima* (Borck.). On Millstone Grit, Hawkesworth, v.-c. 64, August 14, 1925. These specimens are from a new station. Those I sent in 1917 from Baildon were from a station which has since been wilfully destroyed.—J. CRYER. "This compares very favourably with two Continental specimens gathered by F. Secondaire in Spain, and another collected by Timbal-Lagrave. The leaves are rather smaller, but of the right shape, and the serratures are intermediate in size or depth with the specimens in question. I regard it as one of the numerous forms and derivatives of the hybrid *M. longifolia* × *rotundifolia*. I have seen the broad-leaved form in herbaria under the above name, and which Briquet names *M. niliaca* Jacq., var. *Halleri* Briq."—FRASER. "Not white-tomentose enough for this variety, nor will it do for var. *candicans* Miller, as the description, here appended, shows:—'Foliis lanceolatis serratis, subtus incanis, floribus spicatis hirsutissimis. . . .'—(*Gard. Dict.*, ed. 8, No. 3, 1768). Mr Cryer's plant is best left, I think, under the type."—SALMON.

Mentha piperita L., forma *officinalis* = (*M. officinalis* Hull). A large clump by brook, Middlewick Rifle Ranges, Colchester, N. Essex, v.-c. 19, August 16, 1925. Evidently the garden form, but well established and far from houses, on swampy heathland. Up to the present only noticed here in the district.—G. C. BROWN. "Yes, but the hairiest form of it I have seen; I have seen this form from S. Aberdeen, with both sides of the leaves and the stems considerably hairy. The inflorescence is about as that of *M. vulgaris* Sole, but that is doubtless due to environment. My sheets from four counties in S. and N. Britain are much more glabrous, and cultivation does not alter them."—FRASER. "I agree."—SALMON.

Mentha citrata Ehrh. (*M. adspersa* Moench; *M. odorata* Sole). Damp roadside near Priddy-on-Mendip, N. Somerset, at 850 feet, September 24, 1925. See *Journ. Bot.* 1906, p. 32; and *Fl. Brist.*, p. 468. Owing probably to the season's drought these examples are undersized in both stem and flower-head compared with the plant's growth in other years. This Mendip *citrata* has lost much of the sweet citron-like odour that marked it when first observed. At present the scent reminds one rather of peppermint, and if foliage only be regarded there now seems little to separate it from *piperita-vulgaris*. Still, for slugs and snails there must remain an appetising savour that makes the plant more palatable than any other Mint, for no other suffers such disfigurement from their repasts. And with Mints in general the scent sometimes varies from year to year and from one locality to another. MM. Malinvaud and J. Lloyd speak of gathering "typical" *M. aquatica* and *M. arvensis* both possessing a delicious perfume of bergamot that contrasted agreeably with the ordinary strong odour of those species. Mr J. Fraser, too, reports *M. aquatica* with a strong *citrata* odour from Mortlake on the Thames, and this proved to be permanent on cultivation. Conversely, Dr Druce records (*Rep. B.E.C.* 1923, p. 205, No. 1993) a *piperita* form with scent of citron that reverted to peppermint a little later. Wirtgen at one time thought *M. citrata* might be the hybrid *rubro-aquatica*, but that synonomy had disappeared from the last issue of his *Herb. Menth. Rhenan.* Briquet and Rouy make it a variety of *M. piperita*, with which it is certainly more allied than with *aquatica*, where it was placed in *Lond. Cat.*, ed. x. In the new *Catalogue*, however, it stands as a full species. Most authors do not separate *citrata* from Sole's *odorata*, although the latter was described as being not entirely glabrous, "foliis glabrioribus," and "stem almost glabrous." It is difficult to believe that the presence of a few hairs here and there on the underside of a leaf or the lower part of a stem, or their absence, can help much in arranging these hybrids. Sole's specimen differs somewhat from the Mendip plant in habit and foliage. It suggests, in fact, a nearer approach to *M. aquatica*. He gathered it in N. Wales, and probably cultivated it in his garden at Bath, distributing specimens therefrom.—J. W. WHITE. "The two most peculiar points about these specimens of *M. citrata* Ehrh. are the strong peppermint scent, and (on my specimen) the five pairs of oblong leaves at the base of the stem. I have learnt that the scent of Mints may vary. With regard to the oblong leaves, I observed several of the varieties of *M. arvensis* L. had made very narrow leaves during June and the first half of July 1925; then, with the advent of heavy rain in Surrey, these Mints, both wild and cultivated, made much larger and broader bracts than the true leaves. Nothing sooner changes the character of Mints than a superabundance or insufficiency of moisture. The leaves of the Mendip plant are rather more hairy than mine, but Ray collected a hairy form. The flowers are ♀, but so are mine, and Sole's plant was of that sex."—FRASER. "I think that Ehrhart's description— 'Folia ovata, petiolata, glabrata; capitula obtusa'—points to a plant closely allied to *M. aquatica*. Mr White's plant possesses the elongated spikes, etc., of *M. piperita*, under which I should place it. I should be glad to know how he separates it from the Walton-in-Gordano *piperita*? See *Rep. B.E.C.*, 1908, 393; *Watson B.E.C. Rep.* 1909-10, 250."—SALMON.

Mentha piperita L., var. b. *vulgaris* Sole. Marsh at Walton-in-Gordano, near Clevedon, N. Somerset, August 25, 1925. Growing with *M. longifolia*, and, like it, has endured and survived the trying conditions to which the ground was subjected for many years after this Mint was first reported by the late Mr David Fry.—J. W. WHITE. "I quite agree. The lower leaves of the main axis are shortly pilose on the veins beneath, much more so than specimens from Alveston, W. Gloster, but otherwise much the same. It was evidently a common cultivated Mint in Sole's day, and as he described it as a species I would write it *M. piperita* L., b. *vulgaris*

(Sole).''—FRASER. "The lower leaves are getting rather narrow, but it seems to come best under this variety.''—SALMON.

Mentha aquatica L., var. *obscura* Wimm. et Grab. (?). In water by the Upper Frome at Gurney Slade, N. Somerset, September 11, 1925. I confess to failure in the attempt to fit either of these Water Mints precisely to any described Continental variation, or even to decide on which variety it approaches most nearly. The one that agrees with Rouy's description of *denticulata* has not leaves densely hairy on both surfaces as demanded by Briquet; and this, queried for *obscura*, although provided with the narrower leaves, cuneate at their base, with more prominent serrations ascribed to the variety, probably lacks some other essential. Both forms are quite thinly hairy, and might go to *subglabra* Baker as an aggregate. As it has been recognised that British plants in general show some small divergence from the same species when growing abroad a purely British arrangement should be a necessity.—J. W. WHITE. "I do not know the var. *obscura* Wimm. et Grab.; but this conforms very closely to specimens I have seen named by Briquet *M. aquatica*, var. *acuta* Briq. I have a sheet of specimens, grown in partial shade, that are much more nearly glabrous than this. Another one, sent from Cannock Chase, Staffs, was actually labelled *M. aquatica* L., ? var. *subglabra*. Jean Briquet, of Geneva, lays more stress upon the shape and serration of the leaf than upon the degree of hairiness, in naming his varieties. I have seen considerable variation of stems and leaves in this respect that he put under the same variety.''—FRASER. "I regret I do not know *obscura*, but this plant has its leaves too hairy, particularly on the underside, to come under *subglabra*. The latter has them either practically glabrous, or *very* thinly hairy on both sides; they often have a glossy or shining appearance.''—SALMON.

Mentha aquatica L., var. *denticulata* H. Braun (?). (*M. denticulata* Strail). By the Upper Frome at Gurney Slade, N. Somerset, September 19, 1925. Among the numerous forms that constitute such a polymorphic species as *M. aquatica* there will always be some that in their extreme state are so striking as to invite a definition and a name. Although British authors have felt deterred from making the attempt, their Continental brethren—endowed possibly with more adaptable material—have not been so diffident. French writers have described a number of *aquatica* variations, usually as full species, which is a pity, seeing that they shade into each other so imperceptibly that it proves practically impossible to fit an individual plant exactly to any one of them. Rouy (*Fl. de Fr.*) reduces these to ten varieties. A. and E. G. Camus (*Etude Botanique des Menthes*, 1911), after remarking that differences held as distinguishing such variations depend as a rule on the conditions under which they grow, and cannot therefore be of specific value, give quite another list of named varieties in which *denticulata* does not appear. Their figure of *M. aquatica*—presumably to be regarded as type—represents a broad-leaved form with ascending hairs upon the stem, whereas in our plants the adpressed pubescence strongly declines on the stem, and ascends only on the petiole. The handsome plant sent herewith agrees well with Rouy's description of *denticulata* and with that of Gadeceau (*Menthes de la Loire-Inf.*), save for some uncertainty on the leaf-serration, " à dents faibles " by the former, and " fortement dentées " by the latter. It stands under this name in *Flor. Bristol.* But the determination becomes more doubtful when one studies the recent work of Dr Briquet on the genus, most helpfully annotated by Mr Fraser in Dr Druce's 1924 *Report*. Here we find another series of nine described variations of *M. aquatica*, in which var. *lupulina* Briq. supplants var. *denticulata* A. Br., though the Editor remarks that the latter should have precedence. Briquet's more detailed characters show that my plant would do as well or better under var. *Weiheana* Braun, apparently the same as var. *subglabra* Baker. Although we may not be impelled to adopt either of the arrangements mentioned, yet when we find in our British Catalogue hundreds of similar intermediates to be distinguished with like difficulty, it surely is illogical to ignore the intricacies of *Mentha*, however much some of us may dislike the intense segregation that has developed.—J. W. White. " There are two specimens on my sheet, and that with the broadly ovate obtuse leaves, subcordate at the base, is *M. aquatica* L., var. *capitata* Briq. It is one of the two most common varieties in Surrey, but varies immensely in the degree of hairiness. The other specimen on the sheet is a little doubtful, though the smaller upper leaves are right. *M. aquatica* L., var. *denticulata* H. Braun, is a very different looking plant, with very much deeper and more salient serratures, that engage the eye at once. The three sheets of specimens I have seen named by Briquet were also densely hairy in all parts. As well as being the older name, *M. aquatica* L., var. *denticulata* H. Braun, would have been the more appropriate in allusion to the bold toothing."—Fraser. " If Briquet's var. *lupulina* is considered synonymous with Strail's *denticulata* this can scarcely be the latter; Briquet states that his plant has leaves densely hairy on both sides, with very numerous small teeth, etc. Mr White's plant is much too hairy to come under Baker's *subglabra*."—Salmon.

Mentha sativa L., var. *paludosa* Sole. (*M. aquatica* × *arvensis*). Bank of Chew, at Compton Dando, N. Somerset, September 1, 1925. In its extreme form, with an inflorescence apparently terminated by a head of flowers, this is a striking variation; although it seldom happens that axillary shoots are thus terminated as well as the main stem. This seems to be a rare form in the west country. Known at Compton Dando, N. Somerset, September 1, 1925. In its extreme form with an inflorescence apparently terminated by a head of flowers. This is a striking variation, though it seldom happens that axillary shoots are thus terminated, as well as the main stem. This seems to be a rare form in the West Country. Known at Compton Dando more than 30 years.—J. W. WHITE. "This might be an extreme form of *M. sativa* L., var. *paludosa* (Sole), judging from my experience of it. I have a Surrey form with a distinctly spicate inflorescence during the earlier period of anthesis, but the whorls get more scattered later, while quite long branches have the whorls separate all through anthesis. *M. sativa* L., var *acutifolia* Sm., often behaves in having a large terminal whorl or two, and Smith's plate in *Eng. Bot.*, ed. 2, t. 809, shows this. The N. Somerset plant and the Surrey one above mentioned would come under *M. verticillata* L., var. *ovalifolia* Briq., forma."—FRASER. "I agree."—SALMON.

Mentha gentilis L. Stream near Colbourne Station, v.-c. 10, August 1894.—J. H. A. STEUART; comm. NAT. MUS. OF WALES. "Yes, *M. gentilis* L. The material before me is hardly sufficient to determine if any named form of this."—SALMON. "In my opinion this is *M. rubra* Sm., var. *raripila* Briq. The leaves are too broad and too suddenly narrowed to an obtuse point for *M. gentilis*. The calyx tube and teeth are also too long for that plant, which is disguised by growing in water. I have a similar specimen that was partly submerged in water, while the same plant on the grass close by was normal."—FRASER.

Mentha arvensis L., var. *cuneifolia* Lej. et Court. Cultivated from Thames banks, Middlesex, opposite Long Ditton, v.-c. 21. The above is a subglabrous Mint that grows on the banks of rivers and streams. It is closely allied to *M. arvensis* L., var. *Allioni* (Bor.), but differs in the much longer, more acuminate calyx teeth, and in the leaves being narrower and more attenuate at both ends. I have cultivated it for some years, and it remains constant, except that the leaves are a little larger than the wild ones.—J. FRASER.

Salvia verticillata L. [Ref. No. 2816.] Banstead Heath, Surrey, v.-c. 17, August 9, 1925.—C. E. BRITTON.

Nepeta hederacea Trev. f. Waste ground at Bloxham, v.-c. 23, June 1925. I suppose only a luxuriant and large-leaved form, flowering sparingly.—H. J. RIDDELSDELL.

Galeopsis Ladanum L., agg. Sturdy's Castle, Oxon, September 1925.—G. C. DRUCE.

Plantago sp. Waste ground, Splott, Cardiff, v.-c. 41, September 1925. Grain-sifting alien.—A. E. Wade; comm. Nat Mus. of Wales. " Is not this *P. lanceolata* L., var. *major*?"—Downes. " Sub-sp. *altissima* (L.) Rouy," teste Thellung.

Illecebrum verticillatum L. New Forest, Hants, September 14, 1925.—L. B. Hall.

Herniaria glabra L. Lake shore near Hedamora, Sweden, September 1925.—G. C. Druce.

Amaranthus retroflexus L. Weed in garden, Bloxham, v.-c. 23, September 11, 1925.—H. J. Riddelsdell. " Var. *Delilei*."—Thellung.

Chenopodium rubrum L., var. *blitoides* Wallr. Fruits. Wretton Fen, W. Norfolk, October 13, 1925.—J. E. Little.

Chenopodium hybridum L. Building land, Colchester, N. Essex, v.-c. 19, August 13, 1925. Occurring with increasing frequency in the district.—G. C. Brown.

Chenopodium polyspermum L. Waste ground, Cathays Park, Cardiff, v.-c. 41.—Coll. A. E. Wade; comm. Nat. Mus. of Wales.

Polygonum Lapathifolium L., var. *incanum* Lej. et Court. Border of reservoir, Ryhill, near Wakefield, v.-c. 63, September 3, 1925.—W. A. Sledge.

Polygonum Persicaria L., var. *agreste* Meisn. Fruits. " The Folly," Hitchin, Herts, September 10, 1925.—J. E. Little.

Polygonum maculatum Trim. & Dyer. [Ref. No. 646.] Fruits. " The Folly," Hitchin, Herts, September 10, 1925.—J. E. Little. " Trimen and Dyer named it as a sub-species. *Petecticale* (Stokes) retains the earliest trivial (as a variety). I query Persoon's *nodosum* as being the same plant."—Druce.

Polygonum Bellardi All. Waste ground, Splott, Cardiff, v.-c. 41, September 1925. Grain-sifting alien.—A. E. Wade; comm. Nat. Mus. of Wales. " *P. patulum* Bieb."—Thellung.

Polygonum sp. [Ref. No. 2268.] Among grass on waste ground by maltings, Hythe Quay, Colchester, N. Essex, v.-c. 19, July 9, 1925. A curious broad-leaved prostrate plant, with very conspicuous silvery ochreic white sepals, with green midribs, and young fruit pink. Leaves not at all glaucous, and quite different in appearance from *aviculare* forms in the same area.—G. C. Brown.

Rumex arifolius All. Cnochan, W. Ross, July 1924. New County Record.—G. C. Druce.

Rumex arifolius All. Lochnagar, S. Aberdeen, September 1924. —G. C. Druce.

Rumex Acetosella L., var. [Ref. No. 2271.] Cultivated field, West Bergholt, N. Essex, v.-c. 19, May 21, 1925. Very tall and robust plants, scapes and panicles only very slightly reddened. Sent in the hope that it can be segregated under one of the forms indicated in *Rep. B.E.C.* 1923, p. 59.—G. C. Brown.

Ulmus nitens Moench. Bloxham, v.-c. 23, June 22, 1925. Two very large trees on top of hill about 550 feet above sea level.—H. J. Riddelsdell. " Correct, I believe, but the leaves are probably not fully grown."—Jackson.

Salix fragilis L. ♂ [Ref. No. 592.] Confluence of Ippolyts Brook and Ash Brook, Hitchin, Herts, May 6 and August 24, 1925. For notes see *W.E.C.R.* 1924, 306, where Mr J. Fraser thinks it *S. fragilis* × *triandra*, and Mr W. Watson *S. decipiens* Hoffm. For the latter, I believe the twigs should turn clay-coloured, but these do not. The majority of the leaves can hardly be described as parallel-sided in the middle.—J. E. Little. " Robust *S. fragilis* L."—Pearsall. " This is what I name *S. fragilis* × *triandra* (*alopecuroides* Tausch.). The serratures are very dense and bold, but more evenly spaced and more regular in size than those of *S. fragilis.* The stipules are broader, half cordate and oblique, like those of *S. triandra.* The catkins are too stout for *S. fragilis*, often forked, and their scales are very shaggy with hairs when half grown. The leaves are abnormally large, and appear to have been grown in shade, on a vigorous young tree."—Fraser.

Salix purpurea L., var. Quarry, Crox Bottom, Bristol, N. Somerset, v.-c. 6, May 22, 1925.—Miss Ida M. Roper. " *S. purpurea* L., forma."—Pearsall. " The ♀ of the small leaved *S. purpurea* L., which Smith described and figured as the type. The oblanceolate leaves are serratulated from near the apex for more than half-way to the base. This small-leaved form is not at all common as a wild plant, but is often grafted on an upright stem to make a weeping willow."—Fraser.

Salix cinerea × *viminalis*, f. *ferruginea* (G. And). Tilburstow Hill, Godstone, Surrey, v.-c. 17, April 11 and July 25, 1925. When collected in July this still carries all its pubescence, but by September it loses much of it, and shows red hairs. The hairs are always very short, and the underside of the leaves never looks silky, as in

S. aurita × *viminalis*. When a bush is cut down the leaves of the first year's growth appear glabrous to the naked eye, though there is still a thin and very fine pubescence.—J. FRASER. "Yes."—PEARSALL.

Salix caprea L. ♂ [Ref. No. 610.] Little Almshoe, Herts, March 21 and June 16, 1925.—J. E. LITTLE. "The thin texture of the leaves suggests hybridity: their attenuate bases and deeply serrate-crenate margins point to *S. aurita*, but the weight of the remaining evidence is quite against this possibility, in my opinion, and therefore I accept the name."—PEARSALL. "Correctly named; the leaves are not mature, though their characters are evident."—FRASER.

Salix caprea L. ♀ [Ref. No. 609.] Great Wymondley Springs, Herts, v.-c. 20, March 9 and August 25, 1925.—J. E. LITTLE. "I agree."—PEARSALL. "I would say rather abnormal *S. caprea*. The size, shape and indumentum of the leaves are right, but the wavy crenatures are much reduced in depth, almost obsolete, and their apices represented by glandular denticles. One twig bears catkins with subsessile stigmas; and another shoot has more advanced catkins with long styles, but both of these could be gathered from the same bush at the same date."—FRASER.

Salix aurita × *viminalis*. [Ref. No. 308.] Newark Mill, Ripley, Surrey, v.-c. 17, April 29 and August 31, 1925. The striae under the bark of the one and two-year-old shoots of this hybrid are usually very numerous and short, and are derived from the *S. aurita* parent.—J. FRASER. "Excellent examples of this rather rare hybrid."—PEARSALL.

Salix aurita × *cinerea* (*lutescens* A. Kern.). Cheverell's Farm, Botley Hill, Surrey, v.-c. 17, April 18 and August 7, 1925. I consider this a good intermediate between the parents named, both as to catkins and the size of the leaves. The latter vary between obovate and oval, many being close to *S. cinerea* in shape, but shorter. The upper surface is distinctly rugose, the lower densely reticulate and copiously pubescent, showing the influence of *S. aurita*. The pubescence is mixed with red hairs, especially on the veins, indicating the presence of *S. cinerea*. All the three species of the Capreae group were growing together with the hybrid on the chalk formation.—J. FRASER. "The foliage bears a strong resemblance to that of *S. cinerea*, as is frequently the case in this hybrid, but the leaves show some rugosity, have uniformly short acute and oblique tips, and the persistent larger stipules are very dentate. The bracts are rather exceptionally broadly obovate; the ♂ catkins are rather poor but show filaments practically glabrous at the base. I agree to the name."—PEARSALL.

Salix aurita L. ♀ [Ref. No. 76.] Ireleth Moor, N. Lancs, v.-c. 69b, April 25 and October 10, 1925.—W. H. PEARSALL. "Quite a typical form of the species, with obovate rugose leaves, hairy above, tomentose beneath; also the catkins are small and the stigmas sessile."—FRASER.

Salix aurita L. ♀ [Ref. No. 75.] Ireleth Moor, Dalton-in-Furness, N. Lancs, v.-c. 69b, April 25 and October 10, 1925.—W. H. PEARSALL. "Yes, quite typical *S. aurita* L."—FRASER.

Salix. [Ref. No. 57.] Ireleth Moor, Dalton-in-Furness, N. Lancs, v.-c. 69b (see *W.B.E.C. Rep.*, 1923-4, p. 263). April 25 and October 3, 1925. This was distributed as *S. cinerea*, but the present sheets do not sustain the name. The tree grows with yellow Iris in a swampy hollow which is always under water during the winter. This year it is quite obviously dying, and appears to have materially changed its character. On the higher and drier parts of the moor the dominant species is *S. aurita;* in lower and damper parts *S. cinerea* is prevalent.—W. H. PEARSALL. "This is *Salix aurita* × *cinerea* (*lutescens* A. Kern.), very much on the *S. aurita* side. I have two of them, ♂ and ♀, and the former is practically identical with this one. The youngest leaves of my sheet are more downy on the under side, but all the rest are glabrescent, as in this case. I had kept the bush under observation for some years, and concluded that it was the above hybrid, notwithstanding the small size of the catkins."—FRASER.

Salix cinerea L. ♀ [Ref. No. 614.] Purwell Field, Hitchin, Herts, v.-c. 20, April 15 and August 23, 1925.—J. E. LITTLE. "Quite typical."—PEARSALL. "I reckon this is a good intermediate form of the hybrid *S. aurita* × *cinerea* (*lutescens* A. Kern.). The leaves of the more vigorous shoots are long; but they may be long and broad in different forms of the hybrid. The leaves are strongly rugose above, densely reticulate beneath, and far too densely pubescent for a pure *S. cinerea;* and at the end of August only the lower leaves are glabrescent. The style is rather long, but the *S. cinerea* parent often has a long style."—FRASER.

Salix repens L. ♂ [Ref. No. 595.] Trotton Marsh, Borden Wood, W. Sussex, May 5, 1924. The flowers agreed to by E. F. Linton and J. Fraser, 1924.—J. E. LITTLE. Leaves from same station as flowers of [595] ♂ and [596] ♀, but not from the same bushes, September 9, 1925.—Miss K. BURNE; comm. J. E. LITTLE. "Yes."—PEARSALL. "Yes; quite a typical form of *S. repens* L." —FRASER.

Populus marilandica Bosc. ♀ [Ref. No. 617.] Meadow near Grove Mill, Hitchin, Herts, v.-c. 20; flowers April 14, leaves September 5, 1925.—J. E. LITTLE; det. A. B. JACKSON. " Bean represents *P. marilandica* to be a ♀ hybrid between *nigra* L. and probably *monilifera* Ait., bearing some resemblance to *serotina* Hartig, but with longer points and more wedge-shaped bases to the leaves. the sex also different. It is one of the trees commonly known as Canadian Poplar. Britton and Brown (*Flor. North U.S. and Canada*, 1896) make no reference to this hybrid."—DOWNES. " Yes. The leaves of this and No. 133 with their cuneate bases and markedly incurved teeth are very characteristic. It is always a female tree. and of course not native in England. It is in my experience much less common as a planted tree than *P. serotina* Hartig."—JACKSON.

Populus canadensis Moench. ♀ [Ref. No. 621.] Planted. The Avenue, Hitchin, Herts. May 3 and October 6, 1925.—J. E. LITTLE; det. C. E. MOSS. " As the name *canadensis* has erroneously been applied to at least three different poplars it is best not to use it for this tree, which is undoubtedly *P. marilandica* (probably of Bosc.). Another name for it is *P. virginiana* Fougeroux, but this is doubtfully correct."—JACKSON.

Empetrum nigrum L. Moor above Sowden Beck, N. Riding, Yorks, alt. circa 900 feet, June 3, 1925.—J. E. LITTLE.

Goodyera repens Ait. Culbin Sands, Elgin, July 1925.—G. C. DRUCE.

Orchis incarnata L. White flowered. Lapham Fen, Norfolk, June 1925.—G. C. DRUCE.

Orchis Fuchsii Druce. Basildon, Berks, June 1925.—G. C. DRUCE.

Orchis laxiflora Lam. Grand Mare, Guernsey, July 1906.—G. C. DRUCE.

Ophrys apifera Huds. Wilmcote Common, Stratford-on-Avon, Warwickshire, June 16, 1925.—Miss AGATHA WILKINSON.

Habenaria viridis Br. Hilly moorland roadsides, Llanarmon, Denbigh, v.-c. 50, June 6, 1925.—C. WATERFALL.

Sisyrinchium angustifolium Mill. Woodford, Co. Galway, August 24, 1907.—J. W. WHITE and C. BUCKNALL; comm. J. W. W.

Allium vineale L. By River Ouse near Offord Cluny, Hunts, June 20, 1925.—L. CUMMING.

Narthecium ossifragum Huds. Near Canal, Woking, Surrey, August 25, 1925.—W. BIDDISCOMBE.

Juncus alpinus Vill. Near Bollnas, Sweden, August 1925.—G. C. DRUCE.

Luzula Borreri Bromf. Woods, Parkhurst, Lurgashall, W. Sussex, June 9, 1925.—R. J. BURDON.

Wolffia arrhiza Wimm. Pond by the railway at Ken, N. Somerset, September 28, 1923. At the above date this pond, a full acre in extent, was a yellowish pea-soupy mass of the *Wolffia*. I found some duckweed, etc., inseparable from the gathering.—J. W. WHITE.

Scheuchzeria palustris L. Moss, near Bollnas, Sweden, August 1925. Fruiting specimens. When motoring through a spruce and pine wood in Sweden I noticed through the trees a yellowish colouring in a marsh some distance away. It was new to me, and when I had reached waste deep in sphagnum I found the colour was caused by countless thousands of the spikes of this plant. The sphagnum was in places red with *Oxycoccus* berries and the moor was fringed with *Ledum palustre*.—G. C. DRUCE.

Potamogeton pusillus L., sub-sp. *lacustris* Pears. From Lakes Ullswater, Coniston, Windermere, and Esthwaite Water, on various dates as per labels. See *Journ. Bot.*, June 1921, pp. 163-4.—W. H. PEARSALL. "Omitted from the last edition of the *L.C.*"—DRUCE.

Potamogeton panormitanus Biv., var. *minor*. Lewes Flats, Sussex, June 21, 1925.—G. C. DRUCE. "I do *think* this is *P. panormitanus* Biv., but I cannot find a single complete ligule (stipule), so it is impossible to be quite sure. Nor can I find any turions (underbuds), and these two things divide it from all forms of *pusillus*."—BENNETT. "Yes, correctly named; very similar to specimens of this variety distributed through the B.E.C. as *P. trichoides*—ditch near Horsey, E. Norfolk, July 10, 1912—and which Dr Hagstrom subsequently confirmed for me as *P. panormitanus*, var. *minor*. The typical plant varies between wide extremes. Excellent examples of its taller form were distributed in 1913 as *P. pusillus* L., var. *tenuissimus* Koch—the Lake, Southill Park, Beds. These have the stem leaves 3 in. to 6 in. apart; show the very elongate little branched upper portion of the stem, and also the characteristic connate-ochreate stipules, admirably. It is difficult or impossible to make out these distinctive characters unless the plants are properly floated out. A smaller form of the type is found in Esthwaite Water, and several more southern stations."—PEARSALL.

Cyperus congestus Vahl. Waste ground, Bradford, v.-c. 64, October 6, 1924.—J. Cryer. "Yes."—Thellung.

Scirpus pauciflorus Lightf. Marsh, Courthall, Shapinshay, Orkney, July 8, 1925. [Ref. No. 3048.]—H. H. Johnston.

Carex Pseudo-Cyperus L. Fruits. River Wissey, near Hilgay, W. Norfolk, v.-c. 28, July 31, 1925.—J. E. Little.

Carex vesicaria L. Tidmarsh, Berks, July 1925.—G. C. Druce.

Carex hirta L. Malvern Common, Worcs, v.-c. 37, June 16, 1925. —C. Waterfall.

Carex distans L. Near Elton, Hunts, July 19, 1925.—G. C. Druce. Between Grove Mill and Hyde Mill, Hitchin, Herts, July 10, 1925. [Ref. No. 635.]—J. E. Little. Damp places near the sea, Grosnez Castle, Jersey (with *C. Oederi*), July 3, 1925.—L. Arsène. "Yes; many of the fruits, however, have beaks quite smooth, and others with only one or two bristles."—Pearsall.

Carex punctata Gaud. Damp places near sea. Cliffs at Le Sauchet; also at La Corbière and Giffard Bay, Jersey, June 20, 1925. More abundant than Mr Lester-Garland supposed.—L. Arsène. "Correct; typical and well prepared."—Pearsall.

Carex Oederi Retz., var. *elatior* Schl. Wood Walton, Hunts, July 1909.—G. C. Druce. "Yes."—Pearsall.

Carex Oederi Retz. (*Carex flava* L., var. ?). Damp, rocky or sandy places, Grosnez Castle; also at Bonne Nuit, Jersey, July 3, 1925.—L. Arsène. "Not *C. Oederi*, but *C. flava*, in my opinion." —Pearsall. "*C. flava* L., var. *oedocarpa* And."—Druce.

Carex extensa Good. Damp places near the sea. Base of the cliffs at Bonne Nuit Bay, Jersey, June 12, 1925.—L. Arsène. "Correct."—Pearsall.

Carex pallescens L. Elf Hall, S. Cumberland, v.-c. 70, July 15, 1925.—W. H. Pearsall.

Carex cespitosa L., forma. Near Falun, Sweden, September 1925. Not rare in Norway and Sweden and quite distinct from *Goodenowii* Gay.—G. C. Druce.

Carex divisa Huds. Damp sandy places near the sea. Meadow near St Ouen's Pond (with *C. ovalis*), Jersey, June 16, 1925. More abundant than Mr Lester-Garland supposed, though not common.—L. ARSENE. "Correctly named, but difficult to determine in this young condition."—PEARSALL.

Panicum Crus-galli L. Waste ground, Splott, Cardiff, v.-c. 41, August 15, 1925. A grain alien, fairly plentiful in this district.—R. L. SMITH. "Yes."—DRUCE.

Panicum miliaceum L. [Ref. No. 2294.] One immense clump on building land, Victoria Road, Colchester, N. Essex, v.-c. 19, October 1, 1925.—G. C. BROWN. "Yes."—HOWARTH. Waste ground, Newport, I.W., v.-c. 10, September 13, 1925.—R. MELVILLE. "Yes."—DRUCE. "Yes."—THELLUNG.

Panicum maximum Jacq. (?). Waste ground, Newport, I.W., v.-c. 10, September 13, 1925.—R. MELVILLE. "This agrees with *P. maximum* Jacq., as described by Hitchcock and Chase (*North American Species of Panicum*, p. 78, 1910), in possessing a staminate, in place of the usual sterile floret."—HOWARTH. "Is *P. laevifolium* Hack., appr. *amboense* Hackel," teste THELLUNG.

Setaria viridis Beauv. (with longer bristles than usual). Waste ground, Victoria Road, Colchester, N. Essex, v.-c. 19, August 3, 1925.—G. C. BROWN. "The bristles in the type are normally at least 2-3 times longer than the spikelet. The plant corresponds to *Panicum viride*, *eu-viride*, var. *reclinatum* Asch. & Graeb., p. 77."—HOWARTH. "Yes."—THELLUNG.

Leersia oryzoides Sw. Brockham, Surrey, August 1859.—Coll. J. LINNELL; comm. C. E. SALMON. Having been presented with John Linnell's herbarium, and finding therein many duplicates of this interesting grass, collected in 1859, I venture to send a set showing the beautifully exserted panicles which that exceptionally hot summer produced. See *Report* for 1911.—C. E. S.

Agrostis vulgaris L. Ruthin Castle grounds, July 16, 1925.—L. CUMMING. "The authority is Withering. Dr Thellung asserts that it is *A. capillaris* L., which is older than Withering's *vulgaris* or Sibthorp's *tenuis*."—DRUCE.

Polypogon maritimus Willd. [Ref. No. 2264.] Waste ground by maltings, Hythe Quay, N. Essex, v.-c. 19, June 17 and 28, 1925.—G. C. BROWN. "Yes."—HOWARTH & DRUCE. "Dr THELLUNG queries this is *P. monspeliensis* in a starved condition."—DRUCE.

Polypogon littoralis Sm. Cardiff Docks, v.-c. 41, July 4, 1925. This is the plant that I promised last year that I would send, as a companion to *P. monspeliensis* from the same spot. Growing right in the mud on the edge of the pond.—R. L. SMITH. "Yes."—DRUCE.

Apera interrupta Beauv. Sandy roadside, Freshfield, v.-c 59 July 5, 1914.—J. A. WHELDON; comm. NAT. MUS. OF WALES "Yes."—DRUCE.

Aira caryophylla L. [Ref. No. 3054.] Grassy pasture, old quarry, Ward Hill, Shapinshay, Orkney, July 9, 1925.—H. H. JOHNSTON. "Evidently a starved form."—HOWARTH.

Aira caryophyllea L., var. *aggregata* Jord. [Ref. No. 3024.] Hayfield, Courthall, Shapinshay, Orkney, June 30, 1925. Not native.—H. H. JOHNSTON. "The characters distinguishing *Aira caryophylla*, *A. multiculmis*, and its var. *aggregata*, are very variable. This plant agrees with *A. multiculmis* in being taller and more densely tufted, with about 20 culms to the tuft; with *A. caryophyllea* in its straight panicle axis, and spikelets 3 mm. long and slender; but there is again the suggestion of *A. multiculmis* aggregate in the way the spikelets are collected near the ends of the branches. All these forms need careful observation under cultivation."—HOWARTH.

Cynosurus echinatus L. Alien. Godmanchester, Hunts, June 1925.—G. C. DRUCE.

Catabrosa aquatica Beauv., var. *littoralis* Parn. (=var. *minor* Bab.). [Ref. No. 3003.] Grassy sandy pasture by pool near seashore, between mouth of Rackwick Burn and Craig Gate, Rackwick, Hoy, Orkney, June 15, 1925.—H. H. JOHNSTON. "This is dwarfed *Poa annua* L."—HOWARTH & DRUCE.

Briza maxima L. Waste ground, Cardiff Dock, v.-c. 41, June 7, 1925.—R. MELVILLE. "Yes."—DRUCE.

Poa trivialis L., var. *stricta* Doell. [Ref. No. 2760.] Epsom Downs, Surrey, June 26, 1925. A more slender form than in the type, with panicle branches more erect, and leaf-sheaths and spikelets suffused with purple.—C. E. BRITTON.

Poa. [BB. 79.] High Force, Durham, June 1925.—G. C. DRUCE. "I should place this under *P. nemoralis* L., and probably the var. *coarctata* Gaud."—HOWARTH.

Poa compressa L. Limestone Quarry, Ifton, v.-c. 35. October 6, 1925.—A. E. WADE; comm. NAT. MUS. OF WALES.

Glyceria plicata Fr. Sewage Farm, Woking, Surrey, August 25, 1925.—W. Biddiscombe.

Puccinellia procumbens Druce (*Glyceria procumbens* Curt.). Walton, Essex, July 1916.—G. C. Druce. "Should not this generic name be spelt *Puccianellia*, since Parlatore (*Fl. Ital.*, i., 366, 1848) gave the name in honour of Benedetto Puccinelli? But why is this name given precedence to *Atropis* (Trinius, 1845)?"—Howarth. "The answer is that *Atropis* was not properly published in 1845 by Ruprecht. It was properly described as a genus by Ledebour in 1854; meanwhile *Puccinellia* was clearly defined and named by Parlatore (*Fl. Ital.*, 366, 1848) and thus has precedence. See a paper on it by M. L. Fernald and C. A. Weatherby in *Rhodora* 18, 1-23, 1916. They, however, use the name *P. rupestris* (With.) for the above species, but, as I hold, wrongly, since *procumbens* Curt. is the older trivial, and was the one eventually adopted in Withering's *Nat. Arr.* Continental botanists have been led astray by Richter *Pl. Eur.* giving the date of Withering's first edition as 1776. It should be 1796. Doubtless Withering and Curtis independently named the species, but Withering, who had not seen it *in situ*, chose an inept name as it is not a rupestral species."—Druce.

Festuca dumetorum L. Skegness, Lincoln, July 1911.—G. C. Druce; teste Hackel. "This is not by any means typical of *F. dumetorum* "L." Hack., as described in *Monographia Festucarum Europaeorum*, p. 145, 1882. My specimen has mainly foliage of *Ammophila arenaria*, with panicles of *Festuca*, and some foliage which I should place under Hackel's sub-sp. *eu-rubra* rather than *dumetorum*, because the lamina is keeled and the fibrous strands in transverse section are quite distinct, though well developed, and the marginal and sub-marginal strands run together. Some glume-measurements are also in accordance with *F. eu-rubra* Hack. rather than with *F. dumetorum* Hack. The specimen, however, is not true *F. rubra arenaria* Hack. I regard it as an intermediate; similar ones have been described as occurring on the Belgian coast."—Howarth. "Some of the *Festuca dumetorum* from Skegness which has broader leaves Hackel named *planifolia*. See *Report B.E.C.* 38, 141-2, iv. 174, v. 135, 1917, vii. 491."—Druce.

Bromus tectorum L. Near Thetford, Suffolk, June 1925. Established for 40 years.—G. C. Druce.

Bromus secalinus L. Ramsey, Hunts, July 1925.—G. C. Druce.

Bromus secalinus L. Roadside at foot of wall, Bloxham, v.-c. 23, May 1925. I am not sure that the name is right.—H. J. Riddelsdell. "*Bromus commutatus* Schrad."—Howarth & Druce.

Bromus sp. Wall top, Barford St Michael, v.-c. 23, May 20, 1925. I suppose it is all *hordeaceus* L., var. *leptostachys* Pers.—H. J. RIDDELSDELL. "*Bromus racemosus* L., I believe."—HOWARTH. "Not *leptostachys.*"—DRUCE.

Lolium temulentum L. Waste ground, Splott, Cardiff, v.-c. 41, July 4, 1925. Quantities of this grass appeared on some waste ground this year. Obviously introduced with grain.—R. L. SMITH.

Lolium multiflorum Lam., var. *compositum* Thuill. Building land, Victoria Road, Colchester, v.-c. 19, October 1, 1925. Very luxuriant specimens, and agreeing in panicle with specimens I have from two localities in Bucks. However, some barren shoots are produced, possibly owing to over-nutrition.—G. C. BROWN. "Yes."—HOWARTH. "Yes."—THELLUNG.

Agropyron junceum Beauv. [Ref. No. 2899.] Sea beach, Llandrillo-yn-Rhos, Denbigh, July 15, 1925. With rather large spikelets, but not large enough, I think, for the var. *megastachyum* (Fr.). C. E. BRITTON. "Not quite robust enough for *megastachyum.*"—DRUCE.

Juniperus sibirica Burgsdorf. (=*Juniperus nana* Willd.). Heathery banks at burnside, 110 feet, Trowie Glen, Hoy, Orkney, October 31, 1925. [Ref. No. 3231.] Leaves ½-¾ as long as the ripe bluish-black fruit.—H. H. JOHNSTON.

Equisetum palustre L., var. *loniramosum* Klinge. Redgrave, W. Suffolk, June 1925.—G. C. DRUCE.

Lastrea spinulosa Presl. × *dilatata* (?). Lord's Wood, Rownhams, Hants, August 25, 1925. The fronds are narrower than *dilatata*, though the scales are slightly dark in the centre. The teeth are spinulose, as in *spinulosa*, but the frond is more lanceolate than the specimens of *spinulosa* I have found.—W. BIDDISCOMBE. "Can see nothing to suggest *spinulosa*. Scales, irregular margin of indusium, position of sori, and general outline of frond, are typical of *L. dilatata.*"—Miss I. M. ROPER. "Dr Stansfield agrees with me that there is no evidence of hybridity; it is a form of *Dryopteris aristata*. He gives me an additional separating character of the two species—*spinulosa* caudex creeping; *aristata* caudex erect."—DRUCE.

Hymenophyllum peltatum Desv. (*H. unilaterale* Willd. = *Wilsoni* Hook.). Wet mossy rocks at burnside in deep narrow ravine, 630 feet, Trowie Glen, Hoy, Orkney, October 31, 1925.—H. H. JOHNSTON.

Pilularia globulifera L. Shore of Llyn Cliwythlyn, Denbigh, v.-c. 50, alt. 900 feet, August 20, 1925.—A. WILSON. "A good N.C.R."—DRUCE.

Azolla filiculoides Lam. Pond, St Pierre, v.-c. 35, September 22, 1925.—C. E. SALMON; comm. NAT. MUS. OF WALES.

Nitella mucronata Miquel. Lough Manalty, Carrickmacross, Co. Monaghan, August 12, 1901. A large lax form growing abundantly in 4-5 feet of water. The first, and, so far, the only station in Ireland from which this species has been recorded.—G. R. BULLOCK-WEBSTER.

Chara canescens Lois. Hickling Broad, Norfolk, July 4, 1900. A small dense form growing on mud in very shallow water on the north-east margin of the Broad.—G. R. BULLOCK-WEBSTER.

Chara vulgaris L. Waterbeach, Cambs, July 19, 1922. Growing densely in a roadside ditch.—G. R. BULLOCK-WEBSTER.

Chara hispida L. Lough Carnboys, Carrickfin, W. Donegal, August 3, 1923. Growing in dense masses on the east side of the lake in 6-8 feet of water.—G. R. BULLOCK-WEBSTER.

Chara rudis Leonh. Wicken Lode, Wicken, Cambs, July 21, 1922. Growing freely along a considerable length of the lode.—G. R. BULLOCK-WEBSTER. Pool by Llyn Maelog, Anglesey, v.-c. 52, May 1, 1925. The plant recorded in *Fl. Anglesey* from the same locality as *C. hispida* L. is probably the same, but it is now known that *C. hispida* is a more northern plant.—Miss I. M. ROPER.

Chara aspera Willd. (*fide* G. R. BULLOCK-WEBSTER). Frensham Little Pond, Surrey, September 14, 1923.—C. E. SALMON.

Chara desmacantha Gr. & B.-W. (*fide* J. Groves). [Ref. No. 3238.] Mud at bottom of clear water, 1½ feet deep, in a loch. Loch Rango, Sandwick, Orkney, November 6, 1925. Plants very sparingly in fruit, dark green, foetid, with white globose root-bulbils. "A rather weak form. On some stems the spine-cells are mostly solitary, but others bear the characteristic clustered ones." J. Groves. —H. H. JOHNSTON. Lough Carnboys, Carrickfin, W. Donegal, August 4, 1923.—G. R. BULLOCK-WEBSTER.

The Flora of Buckinghamshire.

By G. CLARIDGE DRUCE.

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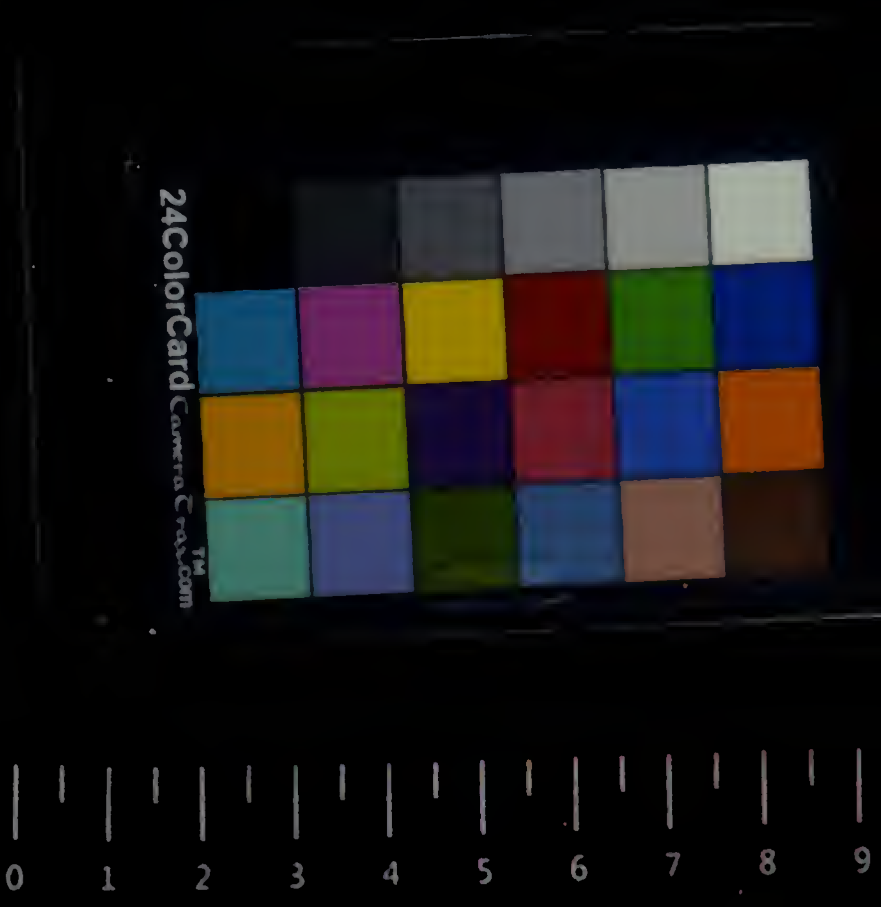
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